# TPA NEWSLETTER

*"Serving the integrated broiler/breeder industry in Tennessee"*

Tennessee Poultry Association

**Winter 2022**


## We wish you all the most wonderful Christmas and Happy New Year!

## Food for thought as we close out 2022

We hope everyone had a wonderful Thanksgiving and will be able to enjoy Christmas with family and friends.

HPAI (highly pathogenic avian influenza, bird flu, H5) unfortunately continues to be a constant threat as there was a positive broiler breeder flock in Bledsoe County detected the week before Thanksgiving, and a recent H5 detection has just been announced in a pastured, organic, egg-laying flock (~37,000 birds) in Weakley County. Waterfowl and black vulture die-offs continue to be reported. Backyard cases and wild bird detections continue to mount to the point that they are no longer a priority for reporting. USDA and TDA are even discussing the discontinuance of reporting, depopulating and surveilling infected backyard flocks as there are simply too many cases occurring, and resistance is often met by some of the bird owners (especially when pets and valuable species are involved). Needless to say, bird flu is everywhere. Anyone waiting for it to be reported closer to home before implementing maximum biosecurity measures is waiting too long.

For those who need to hear this, putting on boot covers in the parking lot after getting out of your truck and then going straight into the chicken house is only taking with you whatever gets picked up along the way. Putting on boot covers once in the control room, and then walking around where others before you have walked after coming inside, is only picking up what has already been brought inside. Roaming from house to house without properly disinfecting or putting on fresh boot covers is only carrying in whatever gets picked up outside between houses. Not fully following proper procedure for showering-in and out facilities is only asking for introduction of unwanted pathogens. Killing rodents and darkling beetles once they are inside a chicken house may be too late, for they have already carried whatever pathogens they have on or in them inside. There are still reports of black vultures getting into mortalities. This simply can't be happening. Yes, they are hard to keep out, maybe even impossible at times once they know where mortalities can be found. Depredation permits can be obtained, and other means of containing and disposing of mortalities *must* be made without further delay when needed. Containing mortalities while awaiting their turn to go into an incinerator, rotary composter, thermal dehydrator, burial pit, or composting shed must be taken seriously.

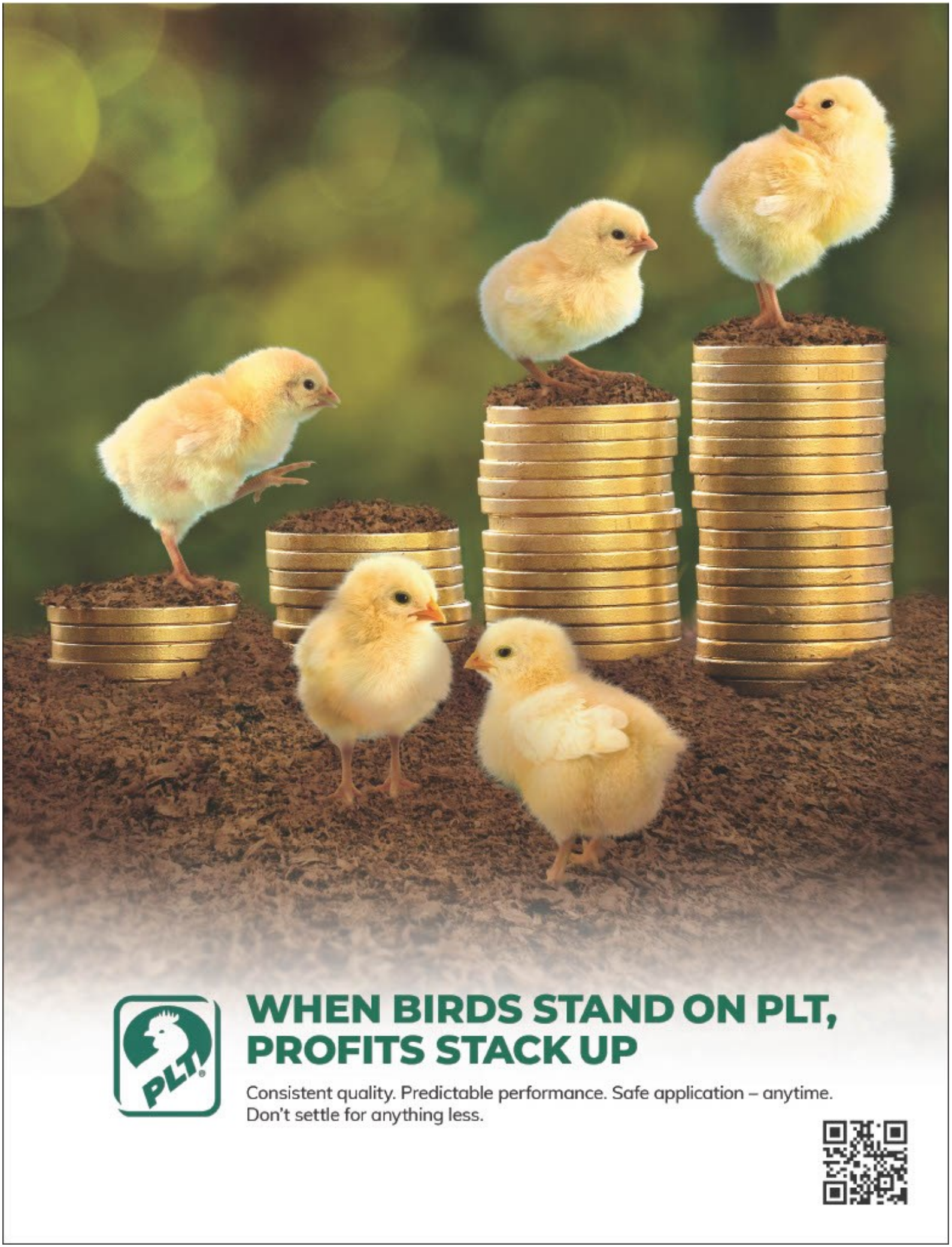
Happy Holidays, everyone…and may the bird flu leave all of you alone – indefinitely.

/dale

### TTU Grand Opening

*Scott Black, Cobb-Vantress, is pictured with Drs. Victoria Ayres and Dennis Fennewald during TTU's grand opening for their new poultry research facility.* *See pages 3 & 4 for more info.*

### *INSIDE THIS ISSUE*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## The Evolution of TTU's Poultry Program

*By Dale Barnett, TPA Executive Director*

In 2012, Dr. Dennis Fennewald joined the animal science faculty at TN Tech. At the time, there were no existing poultry facilities or poultry program at Tech. Dr. Fennewald began teaching a poultry production course and quickly recognized the need for more hands-on experience for his students. He established a small flock at the university's Shipley Farm near campus to introduce students to poultry handling, bird health, and flock management. Almost immediately, interest in the program began to grow as the students were eager to learn and get more involved.

That same year, TPA hired Dale Barnett as its new Executive Director. In his first full year with TPA, Dale set out to meet with the ag colleges across the state in an effort to stimulate more interest in the poultry industry in TN. He noticed right away that there were relatively few graduates from the TN ag programs working within the poultry industry. Dale distinctly remembers asking Craig Benich, who at that time managed the Cobb-Vantress Dry Creek Pedigree Farm and was in the process of hiring their initial team members, "Why aren't you hiring TN grads?" Craig's comment was simply, "We would, but we don't know who they are." Having a previous university background and desire to help mentor students, this was exactly what Dale needed to hear, and he embraced the challenge to help bring about much-needed change.

The first university he visited with was not interested in stepping up the poultry interests for their students at the time. Ironically, Dr. Fennewald reached out to Dale just a few weeks later asking to meet, and the rest is history. Not only did the two start exploring poultry industry opportunities for Tech's students, but a great friendship and working relationship was quickly established. It didn't take long before Tech students attending the IPPE career fairs were becoming sought after for job interviews. The first year that Dr. Fennewald, Dr. Jim Baier (ag engineering professor), and Dale were at IPPE together, over 20 students from Tech attended, and all but one received internship and job offers. The one student who did not receive an offer ended up being gainfully and happily employed in the industry and is now an assistant manager! According to Dale, it is "not uncommon for the companies and HR directors to come up to either me or Dr. Fennewald during IPPE asking to be introduced to [Tech's] students. I also get contacted throughout the year by several of the poultry companies asking for recruiting leads to interview and to help scout the up-and-coming talent from Tech. It's exciting and great to see and be a part of. I love it. I also enjoy staying in contact with these students as they establish their careers. A number of these graduates have already moved into very nice positions rather quickly."

In 2015, under the leadership of Scott Black and Tech graduate Chynette Todd, TPA invited Dr. Fennewald to attend a board meeting and share his thoughts about how we could help further advance Tech's poultry science program. His humble request for an $1,800 chicken coop was quickly met with a hearty "Surely we can do better than that!" from former TPA board member Don Davis, retired complex manager for Koch Foods in Chattanooga. TPA asked Dr. Fennewald to set up a meeting with TTU's President Oldham and VP Terry Saltsman where Scott shared his vision and challenged Tech to start exploring teaching and research facilities of significance. Needless to say, the university accepted the challenge, and Saltsman ended up being very instrumental in gaining the support needed in Nashville to obtain the funds to build the new facilities.

At a subsequent meeting led by former TPA board member Jay Daniels and co-worker Mark Harmon, both of whom were with Hubbard in Pikeville at the time, and also attended by former TN ECD Commissioner Randy Boyd (now President of UT), Amy New and Dale, things started fast-forwarding. While discussing workforce needs and development for Hubbard, the ARC grant opportunity was presented by ECD to support universities preparing graduates for the Upper Cumberland region's workforce. This information was shared with Tech, who successfully applied for and received $280,000 to purchase laboratory equipment, supplies, and equipment for their growing poultry program.

During former Gov. Bill Haslam's administration, the Drive to 55 Grant Program was announced to enhance workforce development in TN. Dr. Fennewald took the lead in applying for this grant opportunity, and Tech was ultimately awarded $2.1 million in 2017 to build a poultry teaching and research center. Brian Johnson with Cumberland Poultry, who was a TPA board member at the time, volunteered to take a group from Tech to Auburn University to visit their research facilities and start figuring out what to build. Jim Donald and Gene Simpson were very accommodating in welcoming this group to Auburn, and Jim was most instrumental in sharing and discussing poultry housing and design. Anyone visiting Tech who is familiar with Auburn's facilities will recognize Jim's impact.

To plan and design the processing area, laboratory, and other space needed between the pen trial barns, Dr. Fennewald relied heavily on the expertise of Maggie Smith, owner/founder of the Viand Group. These two spent many hours working together, researching other facilities, talking to various folks around the country, and making suggestions for the processing area.

Shane Joyner, TPA board member and live production manager for Tyson in Union City, was successful in obtaining $20,000 from Tyson Foods to further the poultry interests and efforts at Tech. These funds have been used to set up the pens and equipment in the trial barns and to purchase equipment and supplies not covered by the Drive to 55 Grant. Brian Johnson is to be highly complimented for his dedicated efforts to the design and build of this facility. University capital projects aren't easy as they present many challenges not faced by industry or individuals when designing and building their own facilities, and things don't always end up in the drawings as intended. Things sometimes even get left out. Brian hung in there and has made sure that everything is in place, hooked up correctly, and operating as it should be. Luke Barnes with QC Supply should also be recognized for working very closely with Brian and Tech towards completion of the project to get the water trees in place and final installations of equipment made. In addition, many thanks to Tom Ellsworth and Stanton Lee for graciously donating the lights for this facility. *continued on next page*

## TPA BOARD of DIRECTORS

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### TPA Board Members

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## The Evolution of TTU's Poultry Program *continued from previous page*

During the grand opening on Dec. 2nd, the laboratory space was named in recognition of funding support made possible by Aviagen. Other naming opportunities are available if anyone out there is interested in also showing their support!

It is a beautiful, well-built facility, and everyone who helped make this possible is greatly appreciated. This facility has now put Tech on the map nationally, and TPA is proud of everyone's involvement, encouragement, and support along the way. Knowing that TPA Hall of Fame inductees Don Crawford and Bill Baisley, who both went to Tech, are smiling down on everyone makes this even sweeter. ◻

## TTU Opens New Poultry Science Research Center

*Information compiled from TTU's press release & other sources available to TPA*

Tennessee Tech University celebrated the grand opening of their Poultry Science Research Center on Dec. 2, which included the official naming of the Aviagen Poultry Science Laboratory space. The new facility, which will give faculty and students in the College of Agriculture and Human Ecology access to cutting edge technology, was made possible through several supporters throughout the state.

"I think this is a great testament to the power of partnerships," said Tech President Phil Oldham. "We believe strongly in partnerships at Tennessee Tech because we believe we are all better together. The students are going to have an opportunity to enjoy this facility and then go off into their jobs and make a big difference – that's what this is all about."

This new facility is located on the grounds of Tech's Shipley Farm, which is across from the Hyder-Burkes livestock arena. The facilities include two 40' x 80' poultry pen trial barn areas, consisting of 48 pens on each end of the 200' long facility for a total of 96 pens. In the middle, separating the two pen trail barns, is laboratory, processing, and office space. The processing area consists of a walk-in freezer and walk-in cooler and will be used for teaching and research purposes once it is fully set up and equipped.

Students will be able to gain hands-on experience while being involved in research efforts led by Dr. Victoria Ayres, the new assistant professor of poultry science.

"I've seen firsthand the impact of what I call scholar-teachers," Lori Bruce, provost and vice president of academic affairs, said. "When faculty have the opportunity to have world-class research facilities to do scholarly work at the top level, that drives discovery, knowledge and innovative solutions to social problems. It also directly impacts the experience our students have because the students get the advantage of being taught by faculty who are world-class. They get to participate in research, but also faculty get to be practitioners of their discipline."

Tech received support from sources such as the Drive to 55 Project Capacity Fund Grant ($2.1 mln), the Tennessee Poultry Association, and the Tennessee Board of Regents. *continued on next page*

## *ADVERTISING INDEX*

## New Farmer's Guide to the Commercial Broiler Industry

*October 20, 2022 in Farming by Dennis Brothers*

New farmers who wish to enter the commercial broiler industry by buying or building a new broiler farm face certain challenges and must make numerous decisions. The New Farmer's Guide to the Commercial Broiler Industry is a five-part series that explores the different aspects of the business: farm types and their estimated business returns; commercial poultry husbandry and biosecurity basics; purchasing an existing farm; building a new farm; and business and financing. The series includes practical information enhanced by charts, graphs, and images.

Farm Types & Estimated Business Returns | Poultry Husbandry & Biosecurity Basics | Purchasing an Existing Farm | Building a New Farm | Business & Financing

## TTU Opens New Poultry Science Research Center

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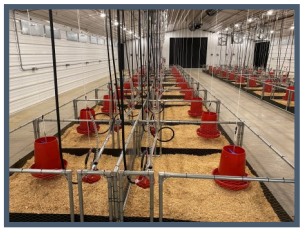

The laboratory space within this facility has been named in recognition of a generous gift made possible by Aviagen, and a dedication ceremony was held as the second part of the grand opening.

$20,000 was donated several years ago by Tyson Foods for this project to help set up the research pens and poultry equipment. This donation was made possible through the leadership of Shane Joyner, TPA board member and live production manager for Tyson Union City.

"This is without a doubt the best research center in the State of Tennessee," Darron Smith, dean of the college of agriculture and human ecology, said. "Having these relationships builds a pipeline for our students to get employment and internships. We have placed a lot of students in the poultry industry across the area. This lab will help train them even more to be able to move into the poultry industry."

Amy New, president and CEO of the Cookeville Chamber of Commerce, agreed. "Industries want people from an agriculture and human ecology background because they bring grit, they bring loyalty, they bring hard work, they bring it all," she said. "I'm excited that we are making those incredible future leaders at Tennessee Tech."

Students at Tech are expected to begin using the facility in Spring 2023. For more information, contact Dr. Victoria Ayres at vayres@tntech.edu or 614-561-0849.

## 2023 TPA EVENT CALENDAR

- ***May 23*** - Scholarship Fundraiser Golf Tournament
  Hermitage Golf Course, Old Hickory TN
- ***May 24*** - Scholarship Fundraiser Sporting Clays Shoot
  Cross Creek Clays, Palmyra TN
- ***June 7*** - Service Tech Workshop
  Farm Bureau Expo Center, Lebanon TN
- ***August 18 & 19*** - Annual Meeting & Summer Getaway
  Gaylord Opryland Resort & Convention Center, Nashville TN
- ***November (exact dates TBD)*** - Grower Meetings
  Cleveland, TN and Martin, TN

## DATES TO REMEMBER

**IPPE**
**January 24-26, 2023**
**Atlanta, GA**
**(Grower discount coupon on p. 34)**
*ippexpo.org*

**TPA SCHOLARSHIP APPLICATION PERIOD**
**February - March 2023**

**REAP GRANT DEADLINE**
**March 31, 2023**
*usda.gov*

## *NEWS FROM AROUND THE COMPLEXES*

Oct. 5, 2022 – **Tyson Foods** (NYSE: TSN) today announced plans to bring together all its corporate team members from the Chicago, Downers Grove and Dakota Dunes area corporate locations to its world headquarters in Springdale, Arkansas. The move will foster closer collaboration, enhance team member agility and enable faster decision making, positioning Tyson to win with its team members, customers, and consumers. Team members will begin the phased relocation in early 2023.

**Mark Harmon** is the current live production manager for the **Tyson Shelbyville** complex. **Brandon Womble**, former hatchery manager for **Tyson Humboldt**, is participating in a live production manager trainee program with Tyson corporate.

**De Wet Nortje**, the former general manager in Crossville for **Aviagen, Inc.'s** pedigree division, is now heading up Pedigree/GGP operations out of Huntsville, AL. **Keith McCay** assumed responsibilities over Aviagen's research farm in Albertville, AL, and **Adam Goldman**, the former research center manager in AL, moved into the general manager position in Crossville.

## *ALLIED MEMBER NEWS*

**Tim O'Connor** is the new General Manager for **Darling Ingredients** in Russellville, KY. Tim was previously the General Manager at Darling's Winesburg, Ohio operation.

Railroads' intermodal service improved considerably during the third quarter, **J.B. Hunt** executives said this on the company's earnings call. "Rail service has shown real signs of improvement in both velocity and reliability during the quarter with positive momentum building, the most notable increase coming from our friends at the BNSF," J.B. Hunt CEO John Roberts says.

## *WELCOME NEW ALLIED MEMBERS*

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Buffalo Warren
Lee Hester
704-366-5763

Cargill Animal Nutrition
Kevin Riley
404-434-1199

CGB AgriFinancial
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270-604-1611

Harris-Crane
John Clark
704-366-0010

Johnson Energy Solutions
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423-580-2790

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Tufco Carolinas
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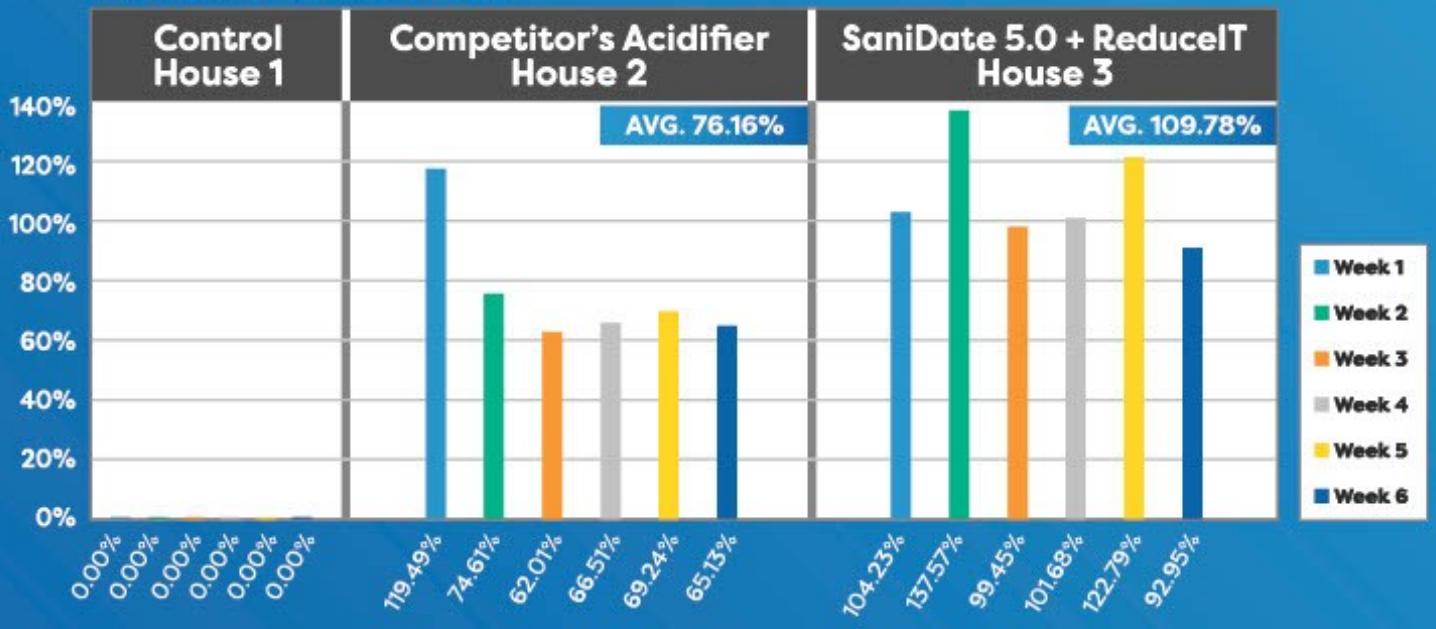
# Reduce pH, Increase Success

BioSafe Systems conducted a farm trial in the fall of 2021 to compare the weekly average water consumption between the control house (house 1), the competitor's acidified product (house 2), and SaniDate® 5.0 + ReduceIT™ (house 3). Products ran from placement of baby chicks through catch. House 3 drank 109% more than house 1, and 33% more than competitor's acidified product.

## %Δ Water Consumption




Keep water clean and clear, provide greater antimicrobial control, and promote a healthy gut flora. Use SaniDate 5.0 + ReduceIT to quickly lower drinking water pH, prevent scale buildup, bacteria growth, and algae in water lines.

### ReduceIT™

- Sulfuric acid (strong acid) + sodium sulfate (buffering salt) formula
- Acidifier and pH control
- Ideal for use while birds are present
- Improves water palatability and efficacy of disinfectants[1]
- Buffered acids are less corrosive, protecting equipment and workers

### SaniDate® 5.0

- Peroxyacetic acid + hydrogen peroxide formula
- Sanitizer/disinfectant
- Chlorine free
- No harmful residues
- OMRI-Listed


1. Vaddu S, Kataria J, Rama E.N., Moller A.E., Gouru A, Singh M, Thippareddi H. Impact of pH on efficacy of peroxyacetic acid against Salmonella, Campylobacter, and Escherichia coli on chicken wings, Poultry Science, Volume 100, Issue 1, Pages 256-262, ISSN 0032-5791, 2021

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## First case of H5N4 avian flu reported in US in noncommercial flock

*October 21, 2022 at WattAgNet.com by Roy Graber*

World Organization for Animal Health says it is believed that the strain found in Montana birds was a reassortment of the initial strain discovered in Canada in late 2021. *Click here for full article*

## First Study Tracking Wild Bird with HPAI Conducted

*October 26, 2022 at FeedStuffs.com by Krissa Welshans*

For the first time, scientists have tracked the movement of a wild bird known to be infected with highly pathogenic avian influenza (HPAI) in North America. The new research, led by the U.S. Geological Survey (USGS), can help improve estimates of when and where the virus could spread in the environment and to other birds. There is a current outbreak of HPAI in numerous wild and commercial bird species across North America. *Click here for full article*

## Bird Keepers in England to Be Required to Keep Flocks Indoors Due to Avian Flu

*November 1, 2022 at FoodMarket.com*

The British government said on Monday all poultry and captive birds in England will legally be required to be kept indoors from Nov. 7 as part of measures to tackle the country's largest-ever outbreak of avian flu. *Click here for full article*

## Vaccination for H5N1 avian flu in Mexico going forward

*November 16, 2022 at WattAgNet.com by Benjamin Ruiz*

Benjamin Ruiz: When talking about Latin America, the avian influenza (AI) virus has become almost ubiquitous: Mexico, Colombia and now Peru. Brazil is in warning mode. The fierce virus seems unstoppable, and the poultry industry needs to continue to work on biosecurity and maybe push to make vaccination part of a regular routine. *Click here for full article*

## Weekly global protein digest: Mexico to vaccinate poultry to block H5N1

*November 18, 2022 at ThePoultrySite.com by Jim Wyckoff*

**Mexico will vaccinate poultry to block H5N1 avian influenza**

Mexico will start vaccinating birds in high-risk areas this week to prevent the spread of the highly contagious H5N1 strain of bird flu in the country, authorities said. Last month, Mexican authorities detected a severe H5N1 strain of avian influenza at a commercial farm in Nuevo Leon state on the border with the United States. *Click here for full article*

## AI Vaccination Emerges as a Divisive Concept in the U.S. Poultry Industry

*October 17, 2022 at Egg-News.com by Simon M. Shane*

The recent National Meeting on Poultry Health, Processing and Live Production clearly demonstrated a division between the needs of the broiler and egg production segments of the industry in acceptance of vaccination as a preventive measure against highly pathogenic avian influenza (HPAI). Opposition to vaccination was evident during the 2015 epornitic which persisted through late May of that year, resulting in depletion of 43 million laying hens although the broiler industry was unscathed. The question of vaccination to prevent and control HPAI has naturally re-emerged during the 2022 epornitic that, to date, is responsible for the loss of approximately 36 million egg producing hens and pullets on 27 farms, 7.5 million turkeys on 173 farms but only 2.4 million broilers on 12 farms and 280,000 broiler breeders on eight farms.

The broiler segment of the U.S. industry is justified in questioning the application of vaccination as it might prejudice export to specific nations. Some importing nations would potentially discriminate against U.S. products in contravention of the World Organization of Animal Health (WOAH) rules. Opposition to vaccination may have been justified in 2015 but circumstances, both with respect to the virus, availability of advanced vaccines and international trade regulations have all changed in seven years.

The H5N1 Avian Influenza virus with Eurasian genes is different from the H5N2 strain responsible for extensive mortality in 2015. The virus is panornitic in distribution, affecting flocks on four continents. The infection is now clearly pathogenic in a wide range of wild bird species, as evidenced by mass mortality not previously recorded. The epidemiology of H5N1 HPAI in North America is clearly different from the 2015 outbreak caused predominantly by H5N2. Incident cases have persisted from emergence in the Maritime provinces of Canada in January through to the present with every indication of an upsurge coincident with Fall migration of wild birds. *continued on next page*

## AI Vaccination Emerges as a Divisive Concept in the U.S. Poultry Industry

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In 2015, many nations that imported U.S. poultry products imposed nationwide bans precluding shipment. Due to the efforts of USDA-APHIS and USAPEEC with input from academia, the WOAH has adopted more realistic policies relating to export bans based on an appraisal of the disease. Restrictions are now imposed at the state or county level consistent with the WOAH principle of regionalization and with a shorter 28-day exclusion period following the decontamination of affected farms.

Since 2015 there have been significant improvements in the ability to rapidly diagnose AI. Prompt identification and depopulation of infected flocks with concurrent quarantine and surveillance with restrictions of movement of live birds have reduced the dissemination of the virus from an index farm. Higher standards of structural and operational biosecurity are applied, especially in the egg-production sector. With the exception of turkey farms, these preventive measures are considered to be responsible for the lower number of incident outbreaks during the Spring of 2022 as compared to 2015.

Perhaps the most significant difference between the 2015 and 2022 outbreaks is the growing realization that HPAI may no longer be regarded as an exotic infection. The occurrence of outbreaks in 35 states, persistence of the infection from January through to October and the number of outbreaks, especially among growing turkeys and backyard farms suggest that HPAI, if not seasonally endemic, is de facto an endemic disease.

Dr. Julie Gauthier, Assistant Director for Poultry Health, USDA-APHIS, correctly stated that inactivated AI vaccines suppress clinical signs and mortality but do not effectively prevent shedding of virus. In her address she noted the development of DIVA vaccines as introduced and applied in Italy during a severe H7 outbreak in 2016-2017. This innovation allowed differentiation between vaccinated and infected flocks on the basis of serology.

Using antibody assay as a diagnostic criterion is an obsolete concept. Dr. Gauthier should know that diagnosis in modern production is based on antigen detection applying lateral flow immunoassay tests initially for field diagnosis or an initial PCR assay in suitably equipped laboratories. Invoking the limitation of serology as a justification to reject vaccination is invalid at the present time.

Studies are currently in progress in Holland to evaluate three commercial vaccines and a number of experimental vaccine candidates to determine suppression of clinical signs and mortality against field exposure. The studies will also indicate whether shedding of virus occurs among flocks vaccinated with commercial products against the prevalent H5N1 strain of HPAI.

Continuing to apply control measures as applied in Pennsylvania in 1974 will be costly and questionably effective if as is anticipated, HPAI persists through the current year and emerges during the early Spring of 2023. Persisting with a policy based on the presumption that the HPAI is exotic to North America will perpetuate a cycle of depopulation-disposal-decontamination-repopulation. This will inevitably degenerate into a situation that could be characterized from a statement made during the Viet Nam War that "It was necessary to destroy the village in order to save it."

It may be held that the USDA-APHIS has been negligent in not undertaking epidemiologic studies to define modes of transmission in cases occurring during the 2022 epornitic. Sixty percent of the egg-production cases requiring depopulation of 86 percent of hens involved sixteen complexes holding one to five million hens. Evaluation of the circumstances contributing to outbreaks would have been helpful in devising appropriate, preventive measures. It is understood that APHIS has conducted epidemiologic studies of outbreaks and the industry would have been well served by early publication of preliminary data based on molecular and farm-level investigations.

The second major justification to oppose vaccines relates to the apparent loss in broiler exports due to embargos. Garrett Borkhuis of USAPEEC noted that export losses, attributed to bans as a result of Avian Influenza, have been limited during the current year through July to $272 million compared to $1.3 billion in 2015.

As has been previously stated, nations adhering to WOAH recommendations would most probably continue importing feet and leg quarters if an effective vaccine were to be deployed. Data compiled by USDA-FAS and duly reported monthly in USAPEEC publications document record export volumes and values for the broiler industry in 2022 concurrently with outbreaks of HPAI.

It is speculative as to whether China would refuse to import chicken feet if the U.S. adopted a policy of protecting flocks with an effective vaccine, given their strong domestic demand, limited world availability and the fact that HPAI is endemic in China. With the extent of HPAI in North America, Europe, Asia and Africa, the infection is no longer regarded as a national problem and extensive bans are both scientifically unjustified and contrary to WTO regulations. If nations wish to use HPAI to protect their industries from competition, the application of vaccine by U.S. exporters is an irrelevant consideration.

The U.S. poultry industry should regard HPAI as a national problem and should avoid inter-segment dissension over vaccination. The industry should be guided by science and impartial and realistic projections of loss to producers of eggs, chicken and turkey meat and the consumers we serve. Simply continuing a program of "stamping out" will become more expensive, present logistical and welfare challenges and impose escalating costs for both the public and private sectors. Vaccination has both advantages and drawbacks. A decision should be made on the basis of the "least bad" economic outcomes to all stakeholders. □

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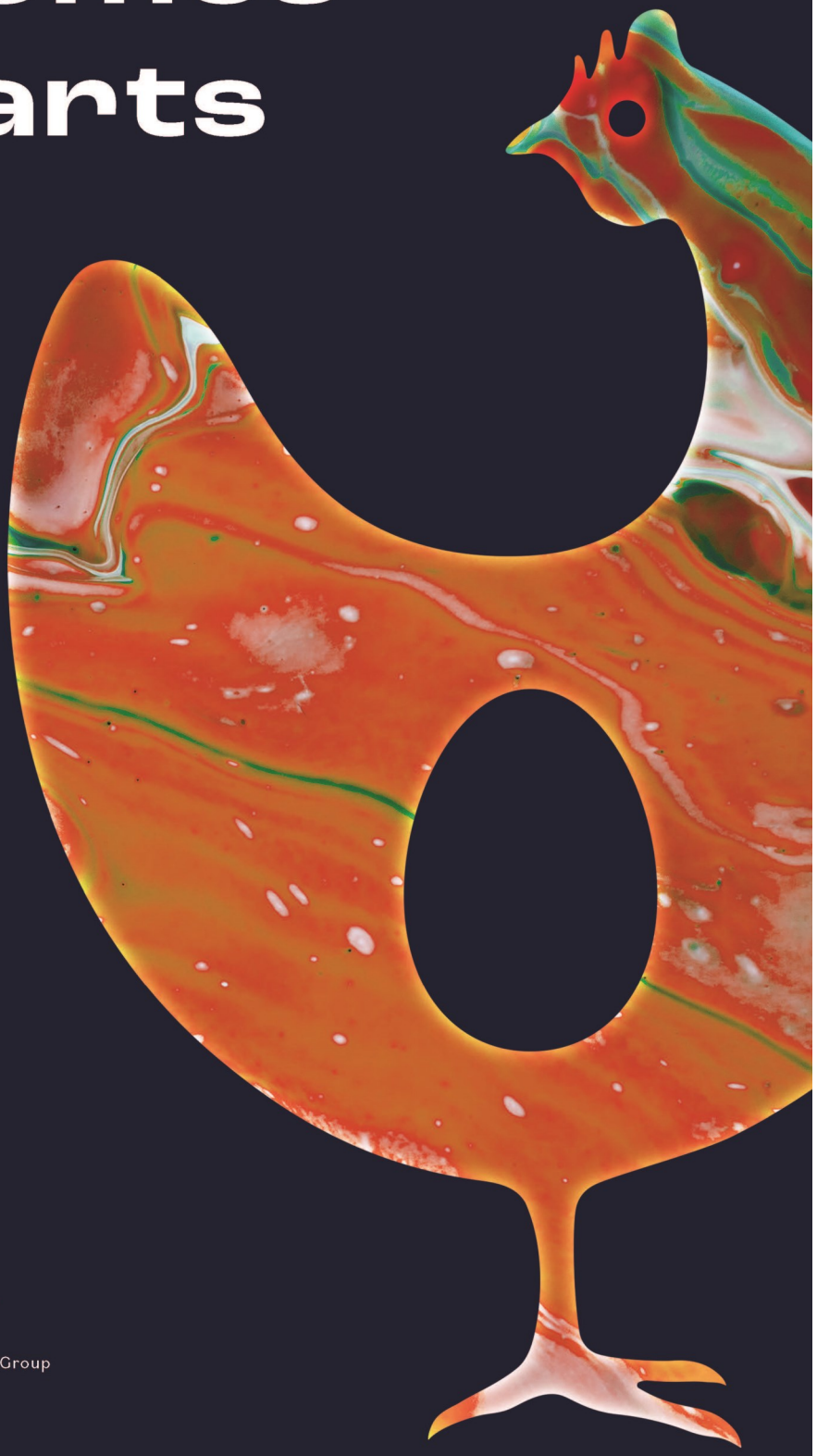
# What comes next starts here.



Reaching your operation's best potential means more than just adapting to meet today's needs. It's about evolving your approach, anticipating what tomorrow may bring. And while the challenges change, the way we stay ahead of them remains the same: innovation.

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## Methods for Preventing Blackhead Disease in Poultry

*September 20, 2022 at USPOULTRY.org by Chongxiao Chen, DVM, Ph.D. at North Carolina State University*

Histomoniasis outbreaks in turkeys and broiler breeders can lead to major economic losses for the poultry industry. Reports of histomoniasis outbreaks dramatically increased after the last approved treatment was taken off the market in 2016. There is an urgent need to understand and develop an intervention strategy to alleviate histomoniasis in turkeys and broiler breeders. The objectives of the current project were to 1) understand the immune response in turkeys elicited by Histomonas meleagridis, 2) understand the factors and pathways of H. meleagridis lateral transmission in turkeys, and 3) investigate the role of production practices on histomoniasis in broiler breeders.

There is a lack of understanding of immune responses in turkeys during a H. meleagridids infection. Findings from the immunology studies suggested a cytokine storm-like syndrome related to a dysregulated immune response in turkeys compared to chickens. This information contributed to understanding why chickens have lower mortality than turkeys during infection. T-cell activities during the infection were closely observed, and important information about early immune response activation during an H. meleagridis infection were recorded. Understanding the intricate details of the turkey and the chicken immune responses to H. meleagridis provides vital information for producing an efficacious H. meleagridis vaccine in the future.

A significant lateral transmission model was not able to be created in multiple experiments in turkeys. However, some treatments/ stressors (e.g., feed withdrawal, reduced crude protein, coccidia, etc.) applied in the research led to an increased infection rate. Similarly, in broiler breeders, reduced feed intake and fenbendazole treatments led to increased liver lesions and produced mortality.

Since no significant lateral transmission was observed, researchers evaluated the potential of an oral-fecal alternative infection/ transmission pathway. The oral-fecal infection model was successfully created and challenged the ideas that have been established for many years that H. meleagridis could only be infected cloacally via reverse peristalsis.

Many turkey farms were visited during the project, and researchers discovered new potential vectors for bringing H. meleagridis onto a farm. Grasshoppers, crickets, slugs, grub, harvestmen, garden spiders, multiple beetle species, tree bugs, darkling beetles and earthworms were identified as vectors for H. meleagridis using the polymerase chain reaction (PCR) assay. One hundred and thirty-two feed additives were screened on histomoniasis in turkeys. Several categories of additives were shown to have a higher potential to reduce histomoniasis mortality during a mild outbreak.

The data presented in the current report provided valuable information for understanding immune responses to histomoniasis and contributes to vaccine development. This project also emphasized that management practices and nutrition may play an important role in preventing and controlling histomoniasis in turkeys and broiler breeders. The novel finding is the new infection model of histomoniasis which opens many opportunities for controlling histomoniasis during an outbreak. ◘



## Inclusion Body Hepatitis Re-Emergence Prompts Fresh Look at Control Strategies

*November 15, 2022 at PoultryHealthToday.com*

The US broiler industry is seeing a re-emergence of inclusion body hepatitis, a deadly disease that can strike with little warning. To help address the ongoing challenge, Poultry Health Today spoke to experts to get the latest insights and management tips. *Click here for full article* ◘

## Impact of mycotoxins on poultry – overview

*November 16, 2022 at AllAboutFeed.com by Samaneh Azarpajouh*

Mycotoxins are a prominent global challenge associated with health and performance issues in poultry and financial losses in production industries. *Click here for full article* ◘

## Can overfeeding soybean meal in starter diets cause necrotic enteritis?

*November 10, 2022 at ThePoultrySite.com by Alfred Blanch and Simone Husballe Rasmussen*

Anyone that ever studied animal nutrition should be well-aware of the trypsin-inhibiting factor (TIF) in soybean meal (SBM) that is detrimental to feeding livestock and poultry. The extraction processes used at the SBM plants have largely addressed the TIF concern when processing raw soybeans. Additional anti-nutritional factors (ANFs) in SBM are now known to exist and must also be addressed.

A recent article in PoultrySite.com features the work of nutritionists with Hamlet Proteins regarding ANFs in SBM and conditions that can lead to necrotic enteritis (NE). NE, which is typically caused by certain types of Clostridium perfringens bacteria, has become much more prevalent in our industry due to the restricted use of antibiotics and the ongoing battles with coccidiosis that further exacerbate the situation. This article builds a case for broiler starter diets to never exceed 30% SBM and a goal to reduce ANFs by 15%. When overfeeding SBM, undigested amino acids from high-protein diets pass through to the large intestine serving then to only feed these harmful NE-causing bacteria. See page 19 for additional information. *Click here for full article* ◻

## Comparing Necrotic Enteritis Litter Models Highlights Performance Impacts

*April 6, 2022 at PoultryHealthToday.com*

Reused litter from a previous necrotic enteritis (NE) challenge led to more severe subclinical performance impacts but fewer clinical signs of disease than in birds raised on fresh litter, in a study by Southern Poultry Research Group. Three floor-pen models were used in the research to compare performance and clinical signs of disease. The first used reused litter to expose birds to Eimeria parasites and Clostridium perfringens bacteria, which together can lead to the development of NE. *Click here for full article* ◻

## Poultry data reveals changes to coccidiosis control trends

*October 13, 2022 at WattAgNet.com by Elizabeth Doughman*

Collecting and monitoring information on the peaks and valleys of coccidiosis outbreaks in poultry could help producers identify better strategies to control the disease. *Click here for full article* ◻

## Best Management Practices Key to Successful NAE Broiler Production

*September 22, 2022 at PoultryHealthToday.com*

With many poultry operations switching to no-antibiotics-ever (NAE) production, management and disease control have become even more critical components. Without antibiotics, hatching-egg quality, hatchery cleanliness, feed quality and farm management — including litter and air quality, ventilation control, temperature control and ammonia content — are in plain sight and mistakes can take a heavy toll, said Tom Tabler, PhD, poultry research specialist, University of Tennessee Extension. *Click here for full article*

## Video: How to Win Against Coccidiosis, Necrotic Enteritis

*November 11, 2022 at FeedStrategy.com by Jackie Roembke*

Coccidiosis and necrotic enteritis pose a constant threat to the health and welfare of poultry flocks worldwide — costing producers billions of dollars. While the clinical effects of these diseases are easy to identify, it is often the unseen subclinical symptoms that cause the greatest impact to profits. Dr. Brian McComb, a poultry technical consultant with Elanco, joins the Chat to explore strategies for combatting both disease challenges simultaneously. *Click here for full article*

## Effect of particle size on nutritional value of soybean meal for poultry

*September 20, 2022 at Soymeal.org by E Ahasic*

Increasing SBM particle size may be beneficial to broiler growth performance and the potential to increase digestibility/bioavailability. *Click here for full article*

## Egg yolk feed additive could boost poultry immune response

*June 17, 2022 at WattAgNet.com by Elizabeth Doughman*

Adding egg yolk to feed could help poultry naturally prevent diseases like necrotic enteritis and optimize production performance. *Click here for full article*

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## Propane reaches lowest spot price for 2022

The Mont Belvieu Propane **Spot Price** on Dec. 5, 2022 was **$0.689/gal.**, which is the lowest spot price experienced this year. The highest spot price occurred during the first full week of March 2022 when it reached $1.615. Propane futures are projecting prices to stay fairly stable, with a slight increase as the new year unfolds.

Allowing for an average of $0.60 per gallon for tariffs, handling and delivery to most areas, **the average current retail prices can be expected to be roughly $1.29/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. TPA's allied member propane companies would love to discuss all of this with you to obtain best pricing and service and their contact information is listed at the back of this newsletter in the allied membership listings.

Quotes for Mont Belvieu **propane futures** are projecting to slowing increase from the current $0.69 to $0.73 this spring and then on toward $0.77-0.78 by the end of 2023. The average current retail price is projected to be at its **lowest** now for the coming year. To follow the futures trading for spot pricing go to 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. The next **application deadline is March 31, 2023**. Visit your local NRCS office for more information.

For an update on current **FMCSA emergency declarations, HOS waivers, and exemptions** go to https://www.fmcsa.dot.gov/emergency-declarations. Update of concern: *The current Biden administration is considering reducing the maximum length of all emergency declarations by FMCSA and Governors to being only 5 days. This is of great concern during times of natural disasters, extreme weather conditions, pandemics, and major supply chain disruption*. □

## USDA has future plans to consider whether Salmonella in chicken should be dealt with

*October 14, 2022 at FoodSafetyNews.com by Coral Beach*

The USDA is beginning to consider whether or not to consider if Salmonella in poultry should be considered a problem. The department's Food Safety and Inspection Service (FSIS) today announced that it is "considering a regulatory framework" for a new strategy that would allow the agency to consider controlling Salmonella in poultry products. *Click here for full article*

## Salmonella serotypes are changing — monitor which ones are in your flock

*September 28, 2022 at PoultryHealthToday.com*

Poultry producers and companies need to carry out testing to know what Salmonella serovars are circulating in their flocks, said Chuck Hofacre, president of the Southern Poultry Research Group in Georgia. Those that survive all the way to whole-bird carcass rinse or parts rinse are the ones growers should focus on in their live production, he told Poultry Health Today. *Click here for full article*

## Is the poultry microbiome key to Salmonella prevention?

*May 23, 2022 at WattAgNet.com by Elizabeth Doughman*

Understanding how the microbial makeup of the poultry gut impacts and responds to Salmonella infections, and other pathogens, could lead to more effective treatments and preventative measures. This would benefit poultry production, food safety and human as well as bird health. *Click here for full article*

## Darkling Beetle Control Could Prevent Salmonella in Poultry

*September 14, 2022 at WattAgNet.com by Elizabeth Doughman*

Darkling beetles are a vector for foodborne pathogens, including Salmonella and E. coli, and poultry diseases like Marek's disease, infectious bronchitis and blackhead disease. In addition, during bad infestations, darkling beetles have been known to destroy the insulation of poultry houses and bite birds, which can cause scars on the breast tissue of birds, affecting meat quality and resulting in condemnations at the processing plant. *Click here for full article*

## Study highlights risk of high Salmonella exposure, more persistent serotypes

*September 10, 2022 at PoultryHealthToday.com*

Feeding broilers a "cocktail" of three Salmonella serotypes known to cause illness in humans showed that the higher the level of exposure, the more severe the impact on feed intake and conversion. Salmonella Reading also had greater colonization than other serotypes by the end of production, the University of Georgia study found. *Click here for full article*

## Impact of acidified water on live Salmonella vaccine evaluated in broilers challenged with S. Heidelberg

*October 27, 2022 at PoultryHealthToday.com*

A study using 360 broilers showed that the use of acidified drinking water did not impair the efficacy of a live Salmonella Typhimurium (ST) vaccine in birds challenged with Salmonella Heidelberg. Researchers found no statistical differences in recovery between the birds that did and did not receive acidified water alongside the vaccine. *Click here for full article*

## Recombinant Vaccines for Poultry: How to Maximize Results

*September 22, 2022 at PoultryHealthToday.com*

Proper vaccine handling, dosage and administration are key to ensuring thorough and effective coverage. That statement is particularly true when talking about recombinant vector vaccines.

"We have seen in the last 15 years or so that we can have more and more recombinant products protecting birds against multiple pathogens in a single injection," Guillermo Zavala, DVM, PhD, Avian Health International, told Poultry Health Today. "They are not the solution for everything, but they are certainly very helpful for our goals in the poultry industry, whether you produce meat-type chickens or commercial table eggs." *Click here for full article*

## Limiting E. coli transmission from hen to offspring

*April 2022 at PoultryHealthToday.com*

A modified-live vaccine against Escherichia coli is now available for use in birds in lay in the EU, providing an important tool for limiting the spread of E. coli from hen to chick. Henrik Christensen, PhD, DVSc, University of Copenhagen, spoke with Poultry Health Today about what this means for poultry producers in Europe. *Click here for full article*

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## Campylobacter and litter management

*November 21, 2022 at ThePoultrySite.com by Chris Wright*

**Sufficient downtime between flocks can prevent cross-contamination from Campylobacter**

Campylobacter is an important foodborne pathogen affecting the poultry industry and causes over 96 million cases per year worldwide. This organism is highly associated with poultry products, therefore efforts to control Campylobacter during production are necessary, said Matthew Bailey of Auburn University, USA, during the 2022 World's Poultry Congress.

Because broiler farms typically reuse litter for multiple flocks, there is potential for cross-contamination with Campylobacter from one flock to another. Bailey's research tried to determine if reusing litter leads to Campylobacter cross-contamination, and determine the effects of common litter treatments on the bacteria.

Two flocks of birds were raised in 25 pens up to 42 days for this experiment. For the first flock, birds were inoculated with 3 marker strains of Campylobacter jejuni (ciprofloxacin resistant) on day 7 and allowed to naturally contaminate fresh litter by fecal shedding. One set of pens was left uninoculated to serve as a negative control, said Bailey.

After flock 1 was terminated, a down-time of 19 days was implemented, and prior to placement of the second flock, different litter treatments were applied.

The treatments included: Uninoculated, fresh litter; untreated reused litter; composted reused litter; reused litter treated with sodium bisulfate; and reused litter composted and treated with sodium bisulfate, he said.

The second flock of birds were then placed on the treated, reused litter. For both flocks of birds, on days 7, 14, 21, 28, and 42, litter samples from each pen were collected by boot swab and five ceca samples per pen were collected. Samples were enriched and analyzed for C. jejuni using the 3M Molecular Detection System, and positive samples were confirmed by streaking onto Campy Cefex plates supplemented with 1mg/L ciprofloxacin, Bailey noted.

For flock 1, overall C. jejuni prevalence in ceca samples was 0% at day 7 (before inoculation) and reached 94.4% by day 42. Prevalence in boot swabs was also 0% at day 7 and reached 100% by day 42, he said.

For flock 2, no C. jejuni was detected in any samples, said Bailey. These results indicate that reusing litter is not a potential source for C. jejuni cross-contamination when a down-time of 19 days is applied between flocks, he concluded. □

## Orange corn impacts footpad dermatitis in broilers

*October 4, 2022 research results as reported in AllAboutFeed.net*

Although there are many predisposing factors of footpad dermatitis in poultry, a team of researchers in the U.S. set out to determine the effect of orange corn diets on this condition. Results of their study are as follows, from AllAboutFeed.net:

At 42 days of age, birds on the wet litter had greater severity of footpad dermatitis, scores 1 and 2, compared with the control group (88% vs. 13%, respectively). At 42 days of age, the prevalence of more severe footpad scores, 1 or 2, was lowest on the orange corn diet (33%), followed by white corn (56%) and yellow corn (63%). Birds fed the orange corn diet had higher body weight throughout the study and had fat pads and livers with higher yellow pigment deposition.

As the birds grew, both white and yellow corn groups had an increasing incidence of moderate and severe footpad scores on wet litter. The orange corn group on wet litter saw a peak of moderate footpad scores at 27 days of age which then declined until termination of the study.

The orange corn diet had the longest absence of severe footpad scores, the wet litter group fed yellow and white corn had severe footpad scores by 27 days of age, while birds fed the orange corn did not develop severe scores until 35 d of age. All 3 corn groups saw increasing severe footpad scores between days 35 and 42 with the largest increase occurring in the white corn group followed by the yellow and orange corn groups, respectively. *Click here for full article* ◘

## UGA Study Finds Reusing Poultry Litter Bolsters Birds' Immune Systems

*September 29, 2022 at FeedStuffs.com*

A joint research collaboration between the University of Georgia's Department of Poultry Science and the U.S. National Poultry Research Center, housed within the USDA's Agricultural Research Service, has been investigating the role that bacteria play in poultry health and food safety. New research from this group has found that the type of litter broiler chickens are raised on plays an important role in their pre-harvest health. *Click here for full article* ◘

## Broiler litter reuse can halt antibiotic resistant bacteria

*October 24, 2022 at WattAgNet.com by Elizabeth Doughman*

Reusing litter could help prevent the development of antibiotic-resistant Salmonella and other pathogens in broilers, revealed new research published in Applied and Environmental Microbiology. *Click here for full article* ◘

## Focus on the details to ensure ILT vaccination success

*October 19, 2022 at PoultryHealthToday.com*

Vaccination against infectious laryngotracheitis requires care and patience if it's going to be as successful as it can possibly be, says Dale Gambrill, senior account manager, Zoetis. In an interview with Poultry Health Today, he talks through the key considerations to ensure a positive outcome. *Click here for full article* ◘

## Study: Day Length During Brooding Did Not Impact Broiler Performance

*October 20, 2022 at PoultryHealthToday.com*

Dark periods are well documented to benefit the long-term performance, health, and welfare of broilers. However, to ensure chicks actively seek out food and water, the traditional practice is to provide extended daylight during the early brooding phase. But is that still the right call? *Click here for full article* ◘

## Cooler transport temperatures could benefit poultry welfare

*October 3, 2022 at WattAgNet.com by Elizabeth Doughman*

A new approach to poultry transportation that features curtain-sider design, forced airflow and both heating and cooling could optimize the shipping climate and improve bird welfare. *Click here for full article* ◘

## Poor broiler performance may be related to microbiome beta-diversity

*October 5 2022 at ThePoultySite.com by Simone Husballe Rasmussen*

To continue on the topic of the microbial community within the digestive tract and the relation to health and performance of broiler chickens, as discussed in last month's article (Brown et al., 2022 a), not only alpha-diversity, but also beta-diversity of ceca microbiota may be affected by graded levels of the soy anti-nutritional galacto-oligosaccharides (GOS) stachyose and raffinose.

Beta-diversity is an analysis used to quantify the similarity between different microbiome populations (Su, 2021). In the field of animal science, the beta diversity tells us how similar the microbiome is within a group of animals fed the same diet under the same environmental conditions. However, in contrast to alpha-diversity, which is considered positive for animal health and performance, greater beta-diversity is related to reduced broiler performance (Stanley et al., 2016).

In a study previously presented at PSA 2022 (Brown et al., 2022 b) further investigations revealed a dose-dependent effect of added anti-nutritional GOS on beta-diversity of ceca microbiota of broiler chickens. Beta diversity analysis of the replicated dietary treatments showed that the differences between samples from the same dietary treatment were small in chicks fed a GOS-free diet or only 0.9% GOS, while a greater variation in ceca microbiota composition was observed in chicks fed 1.9%, 2.7% and 3.6% soy anti-nutritional GOS (Figure 1). In addition, GOS-free and 0.9% GOS groups showed distinct clusters when compared to the other three groups. Thus, these findings indicate greater sample variation within dietary treatment with increased levels of GOS. Or put in other words, the homogeneity of microbiome composition within a group of animals was decreased with increased levels of soy anti-nutritional GOS. In the same study, a linear response of increasing levels of GOS was observed on FCR (the higher the content of GOS in the diet, the poorer the FCR of the chickens), corroborating the findings of Stanley et al. (2016).

In conclusion, dietary anti-nutritional GOS levels does seem to also affect microbial beta-diversity, which is suggested to be negatively correlated with animal performance. This further emphasizes the importance of knowing the content of soy GOS in your starter diet. □

## Pullets seem unaffected by stocking density, feeder space

*September 20, 2022 at WattAgNet.com by Meredith Johnson*

Cage-free pullets appear to be unaffected by stressors including stocking density and feeder space, according to research conducted by Purdue University. *Click here for full article*

## Private Water Well Placement and Sizing for Poultry Production

*November 14, 2022 at PoultryProducer.com*

Poultry production often takes place in rural areas that do not have access to a public water supply, and sometimes producers choose to have a well drilled to reduce the long-term cost of water. This publication gives guidance for well placement in proximity to poultry houses. Producers need to be aware of potential groundwater/surface water contamination, potential additional installation costs, and ease of use issues. *Click here for full article*

## EU to consider ban on culling male layer chicks

*October 24, 2022 at WattAgNet.com by Mark Clements*

The European Commission is considering adopting a measure to end the practice of culling male layer chicks. *Click here for full article*

## Egg farm to raise male layer chicks for meat production

*October 25, 2022 at WattAgNet.com by Elizabeth Doughman*

Dutch egg company, Kipster, plans to eliminate male chick culling at its U.S. layer farm by raising the roosters as an alternative meat source. *Click here for full article*

## Optical sorting could accurately sex broiler chicks

*September 20, 2022 at WattAgNet.com by Elizabeth Doughman*

New sexing technology that uses reflected light to sort broiler chicks also by weight and external defects could help improve bird growth and save on production costs. *Click here for full article*

## Altering the egg microbiome can improve chick health

*November 8, 2022 at WattAgNet.com by Meredith Johnson*

Manipulating the eggshell by applying a nutritional egg coating in the hatchery introduces probiotic bacteria to a developing chick from the outside of the egg, which can help generate a better immune system and gut health. *Click here for full article*

## Hatchery details key to maximizing chick performance

*April 1, 2021 at PoultryHealthToday.com*

A back-to-basics approach towards managing, handling and storing eggs can help maximize the quality and hatchability of chicks produced for broiler flocks, according to independent poultry consultant Scott Martin. “We need to remember we’re in the meat production business, not the egg business, and we need to produce the best quality chick we can for the customer,” he said. *Click here for full article*

## USDA preparing avian flu risk assessment tool

*December 12, 2022 at WattAgNet.com by Roy Graber*

The United States Department of Agriculture (USDA) hopes to use data it gained from studying commercial poultry farms hit by highly pathogenic avian influenza (HPAI) in 2022 to better equip producers from being affected in 2023 and beyond. *Click here for full article*

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## Aviagen Hatchery Tips: Chicks too hot?

*From* http://en.aviagen.com/assets/Tech_Center/BB_Resources_Tools/Hatchery_Tips/HatcheryTips-2020-1-42-EN.pdf?utm_source=Omeda&utm_medium=Email&utm_content=NL-Poultry+Update&utm_campaign=NL-Poultry+Update_20221030_1900#page=3

## Senate joins House in legislation to avert rail strike

*December 2, 2022 information in Farm Week by Timothy Eggert*

The U.S. Senate signed off on a measure Thursday that [derailed] the possibility of a Dec. 9 nationwide railroad strike. Lawmakers voted 80-15 to force 12 rail labor unions to adopt a tentative agreement brokered by the Biden administration this fall.

The legislation, which the House approved Wednesday, now goes to President Joe Biden for his signature. Earlier this week, he met with and urged Congressional leaders to intervene in the dispute and "send a bill to my desk for my signature immediately." *Click here for full article*

## GM Corn Ban in Mexico Destined to Be a Disaster

*October 19, 2022 at WattAgNet.com by Benjamin Ruiz*

In about 15 months, genetically modified (GM) corn use in Mexico will be banned, as per a presidential decree. This measure, quite unpopular within the industry – mainly feed manufacturing and starch – is full of misinformation and unscientifically proven facts and is paired with uncertainties on how this will be applied. *Click here for full article*

## Future of Ukrainian grain deal uncertain – impact on global market

*November 11, 2022 at AllAboutFeed.net*

The global grain market must be braced for uncertainty as concerns over the future of the Ukrainian grain deal remain high. *Click here for full article*

## Walmart, Kroger will not meet 2025 cage-free commitments

*October 14, 2022 at WattAgNet.com by Meredith Johnson*

Grocery store chains Walmart and Kroger announced they will not be able to supply 100% cage-free eggs by 2025. *Click here for full article*

## McDonald's 8 chicken welfare commitments for 2024

*October 20, 2022 at WattAgNet.com by Austin Alonzo*

The chain will implement these changes across at least 70% of its global supply chain by 2024. *Click here for full article*



## New NRCS Website Now Available

*November 9, 2022 at MorningAgClips.com*

A new USDA Natural Resources Conservation Service website has been unveiled. Designed for farmers, ranchers and forest landowners who use NRCS programs as well as partners, the new site supports and enhances the mission of the agency by delivering relevant, timely, customer-focused information in an easy-to-navigate platform. *Click here for full article*


# TIP 5

## Hot Eggs Damage Chick Quality

There is an optimal embryo temperature range where embryos will be comfortable. When eggs get too hot, chick quality will suffer long before hatchability is affected.

Check the eggshell temperatures on days 16 to 18 of incubation, when the embryos are producing a lot of heat, to see if there are any dangerous hot-spots developing in the setters. Use a Braun ThermoScan infra-red ear thermometer, or Tiny Tag temperature loggers to monitor the eggs in the centre of the egg trays in as many different locations as you can.

Chick quality will be affected wherever you find eggshell temperatures exceeding 102°F (38.9°C). Chicks from overheated eggs will hatch earlier, so are more prone to dehydration. They will also be paler, shorter and the yolk sac will be bigger. Unhealed navels will be more common.

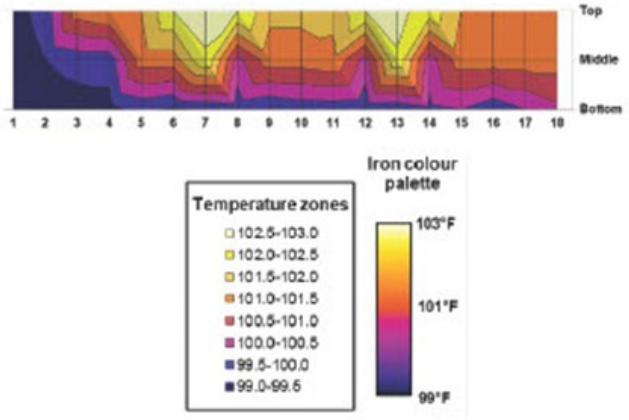
When chick quality is poor, not only will there be more culls and downgrades at the hatchery, but also performance on the broiler farm will be poorer. Chicks from eggs which have been overheated will not grow as well, and will tend to have higher mortality throughout the flock life. Feed conversion may also suffer.

**Figure 1** The pale coloured chick was overheated.

**Figure 2** Hot area in a single stage setter.

If ventilation is adequate, hatchability is not usually affected until higher eggshell temperatures are reached.

It is easy to visualise the variation in eggshell temperature in the setters by entering the temperatures into an Excel spreadsheet, and plotting a graph using the chart type 'surface' and the option 'contour'. In the example given below, taken from a fixed rack multistage setter and using a thermal image iron colour palette, the graph shows a cool spot near the door and two hot spots in stacks 7 and 13.




Places where eggshell temperatures exceed 102°F (38.9°C) indicate that action is needed. Check door seals, fan speeds, setting patterns (was the set balanced?), spray nozzles, cooling coils, solenoids, water flows, fan blades, turning angles and frequency and incoming air temperature and humidity.

**Figure 3** Chicks that are cold.

First published in International Hatchery Practice

# TIP 8

## Managing Chick Holding Room Temperatures

Newly hatched chicks cannot regulate their body temperature very well. Body temperature in young chicks therefore depends on the surrounding environment. Yet it is crucial to help chicks stay in their thermal comfort zone after they hatch. If chicks are too hot or cold, they will use more energy during holding. If they are too hot, they will also pant and get dehydrated. These chicks will not perform well on the farm.

It is extremely busy on a hatching day in a hatchery and it can be hard to monitor and respond to chick comfort. Sometimes problems with chicks being too hot or cold are only seen when DOA numbers increase. On the other hand, it is not simple to keep chicks within their comfort zone in a chick holding room. There is not one ideal chick holding room temperature, which is suitable in all hatcheries, because it depends on chick size, physical condition, room humidity, chick box type and air speed around the boxes. You need to find the ideal holding room temperatures for different seasons in your own hatchery.

One Aviagen internal study has shown that vent temperature is a good indicator of chick comfort. A chick will be comfortable when its vent temperature is in the range of 103-105°F (39.4-40.6°C). Identify sample chicks and measure chick vent temperature hourly in the chick holding room. If chick vent temperature is too high, lower room temperature settings. If chick vent temperature is low, then increase room temperature settings.

If chicks are sampled and chick vent temperature measured at different locations in the chick holding room you can determine where any hot/cold spots are. Then you can use the information to improve chick trolley design, chick trolley placement in the room, air circulation in the room and room ventilation, so that all chicks will be comfortable throughout the entire chick holding room. Using Excel to map the temperature distribution will help to identify problem areas. In **Figure 2** the chicks were all slightly cold, except in the back right corner, furthest from the door. Raising the room temperature slightly, with some additional cooling fans in the back corner allowed the chicks to maintain a vent temperature above 103°F.

**Figure 1** These chicks are too hot.

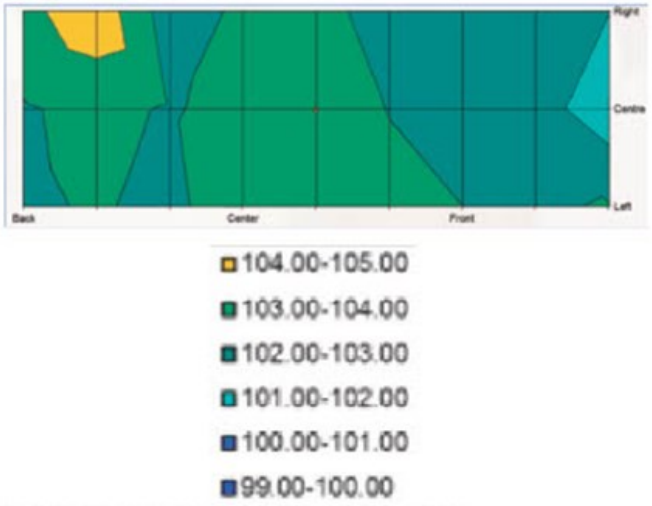



**Figure 2** Chick vent temperature by location.

First published in International Hatchery Practice

# TIP 13

## Keeping Chicks Comfortable

Newly hatched chicks can not regulate their body temperature and rely on suitable environmental conditions to keep them comfortable. In an ideal production system, chicks would be moved from hatcher to farm promptly and quickly. In real production systems there can be several hours between take off and when the chicks are placed on the farm.

The best first week mortality and post-hatch performance will be seen from chicks kept in good conditions between leaving the hatcher and placement on the farm. Suitable room conditions are:

- Room air temperature 22-28°C (depending on air speed around the boxes).
- Relative humidity 50-65%.
- 85m3 fresh air per hour per 1000chicks – the $CO_2$ level in the room should not go over 2000ppm.


**Figure 1** High $CO_2$ level measured in a holding room with insufficient ventilation.

The chicks will be calmer if the chick holding room has dim blue light. Temperature, humidity and air speed all interact to determine the temperature around the chicks. A good ventilation system will remove hot, humid air from around the boxes, without creating a draft directly on to the chicks. Air temperature at chick level inside the box should be around 30-32°C (86-89.6°F), 60-70% RH.

Chicks use behaviour to help control their body temperature, so monitor chick behaviour to know if they are comfortable or not. Chick vent temperature is easy to measure, and highly correlated with deep body temperature. The optimum chick vent temperature is 39.4-40.5°C (103-105°F).

- Chicks that are too cold, vent temperature below 39.4°C (103°F), start to huddle and have cold legs and feet.
- Chicks at correct temperature are quiet and evenly spread out.
- Chicks that are too hot, above 40.5°C (105°F), start panting.

Chick vent temperature measurements can be used to check chick comfort in hatchers, chick rooms, in chick trucks and during the first two days of brooding. Chicks should be sampled throughout the area where they are being held and from near the top, middle and bottom of chick box stacks. Pay particular attention to areas:

- Where chicks are observed to be panting or huddling.
- Where there is fast air movement around the chick boxes.
- Near walls and doors.

**Figure 2** A good layout for a chick holding room with well spaced buggies.

First published in International Hatchery Practice

## U.S. slips down rankings in food security index

*September 26, 2022 at FoodSafetyNews.com*

The United States has fallen a few places in the latest rankings of a report that measures food security. The study from Economist Impact put Finland at the top, followed by Ireland, Norway and France. Canada was seventh and the United Kingdom was ninth. The United States dropped to 13th from ninth in the previous edition. *Click here for full article* ◻

## VIDEO: How CRISPR-SeroSeq could improve food safety in poultry

*September 28, 2022 at WattAgNet.com by Elizabeth Doughman*

Salmonella control remains a major food safety challenge for the poultry industry. Next generation sequencing technologies, such as CRISPR-SeroSeq, could lead to better detection and management for this important pathogen. *Click here for full article* ◻

## USDA changing foreign audit practices

*October 19, 2022 at FoodSafetyNews.com by Dan Flynn*

During the pandemic, USDA's Food Safety and Inspection Service largely replaced its in-country visitation teams with so-called remote verification audits. FSIS audits foreign countries that export meat and eggs to the United States to verify that equivalent food safety standards exist. Typically, that means teams from the FSIS Office of International Coordination visit foreign countries for short periods to inspect facilities and regulatory offices. *Click here for full article* ◻

## No single solution to control Salmonella in poultry meat, say experts

*October 25, 2022 at FoodSafetyNews.com By Joe Whitworth*

Multiple interventions are needed to control Salmonella in chickens raised for human consumption, according to scientists. Findings come from a Joint FAO/WHO Expert Meeting on Microbial Risk Assessment (JEMRA) on the pre- and post-harvest control of Salmonella in poultry meat. *Click here for full article* ◻

## FDA's traceability rule is a game changer for food safety

*November 17, 2022 at FoodSafetyNews.com by Frank Yiannas*

OPINION — The U.S. Food and Drug Administration has taken a landmark action that I believe will change the way government and industry work together to keep food safe and, in so doing, will help save lives for generations to come. On Nov. 15, 2022, we released the final Food Traceability Rule and the list of human foods for which additional recordkeeping requirements will apply under the rule. *Click here for full article* ◻

## FSA sticks with past advice after COVID study results

*December 11, 2022 at FoodSafetyNews.com by News Desk*

The Food Standards Agency (FSA) has published research on the time the virus that causes COVID-19 can survive on food and packaging. The University of Southampton produced the report under contract by the FSA. Researchers measured the rate of inactivation of the virus on the surface of various types of food and food packaging. *Click here for full article* ◻

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## Too Few Aware of FSIS Guidelines about Live Salmonella Vaccines

*November 22, 2022 at PoultryHealthToday.com by Douglas L. Fulnechek, DVM*

When it comes to the risk of Salmonella in the poultry industry, it should first and foremost be noted that Salmonella does not originate at the processing plant, so the aim is to prevent broiler chicks or turkey poults from becoming colonized — a big challenge. *Click here for full article* ◘

## Are you ready? New era in Salmonella sampling, regulations and control coming soon

*November 1, 2022 at WattAgNet.com*

Even though US poultry producers have made great strides reducing the occurrence of Salmonella, nearly 25% of those illnesses are still linked to poultry products. In response, USDA has made reducing Salmonella infection a top priority and is rethinking its approach to managing the ubiquitous foodborne pathogen, which occurs naturally in poultry. Poultry Health Today talked with Salmonella experts about preparing for the changes ahead. *Click here for full article* ◘

## Making the Grade: MSU Scientists Apply High-Resolution Imaging Technology to Detect Poultry Quality Defects

*September 29, 2022 at MSState.edu by Grace Jones*

Mississippi State scientists are applying powerful imaging technology that detects subsurface bruising in fruits as a potential way to identify and grade meat quality defects in poultry. With the goal of developing an automated, reliable method with less human error than manual inspection, MSU scientists with the Mississippi Agricultural and Forestry Experiment Station are conducting research on the feasibility of sinusoidal-illumination imaging, or SII technology, as that novel tool. The project is funded by the U.S. Department of Agriculture's National Institute of Food and Agriculture. *Click here for full article* ◘

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## Fruit imaging approach could detect poultry meat myopathies

*October 26, 2022 at WattAgNet.com by Elizabeth Doughman*

A high-resolution imaging technology originally developed to detect subsurface bruising in fruits could help better identify woody breast, spaghetti meat, white striping and other meat quality defects in poultry. *Click here for full article*

## USPOULTRY Offers HACCP Reassessment Technical Reference Guide

*October 19, 2022 at USPOULTRY.org*

Hazard Analysis Critical Control Point (HACCP) reassessments in poultry processing plants can be challenging, particularly for those who have not had an occasion to perform one. While there is no substitute for experience, USPOULTRY is offering a HACCP Reassessment Technical Reference Guide for those who are performing a HACCP reassessment or validation. *Click here for full article*

## Tyson Ventures Leads Funding Round for Processing Robot

*November 18, 2022 at WattAgNet.com by Elizabeth Doughman*

Tyson Ventures, the venture capital arm of Tyson Foods, participated in a $26 million Series C funding round to expand the commercial development of robotic picking solutions from Soft Robotics.

"At Tyson, we are continually exploring new areas in automation that can enhance safety and increase the productivity of our team members," said Rahul Ray, senior director of Tyson Ventures. *Click here for full article*

## World's first lab-grown chicken sold at Singapore butcher

*December 9, 2022at WattAgNet.com by Emma Cottrell*

After Singapore approved sale of the world's first cultivated chicken, GOOD Meat, a subsidiary of Eat Just, Inc., will be sold at Huber's Butchery, a supplier in Singapore. *Click here for full article*

# Meat/Alt Protein News

## Ag Outlook 2022: Animals are the solution to the world's problems

*September 28, 2022 at MeatPoultry.com by Rachael Oatman*

Jeffrey Simmons shares his vision for achieving climate neutrality by 2030. *Click here for full article* ◘

## JBS shuttering plant-based Planterra business

*October 2, 2022 at Alt-Meat.net by Melissa Sue Sorrells*

JBS USA is shutting down its plant-based business Planterra, according to a report from the Denver Business Journal. The closure will affect 121 workers in the Denver area. *Click here for full article* ◘

## Clarity on US protein alternative labeling could be coming

*September 8, 2022 at WattAgNet.com by Meredith Johnson*

The U.S. Food and Drug Administration (FDA) is developing a draft guidance document for food manufacturers that will cover the labeling of plant-based alternatives to animal-derived foods. *Click here for full article* ◘

## Impossible Foods reformulates after health criticisms

*September 1, 2022 at WattAgNet.com by Elizabeth Doughman*

Impossible Foods has cut the amount of saturated fat and increased protein in its plant-based beef, which places its nutritional value more in line with animal-derived protein products, the company announced. *Click here for full article* ◘

## The Industry Update Newsletter

### Hard Times for Beyond Meat

Plant-based meat company Beyond Meat faces challenges after its shares stood at around $16 on Wednesday—down more than 75 percent this year and far below its hyped price of $235. In a recent earnings call, CEO Ethan Brown placed much of the blame on runaway inflation, along with the fact that Beyond Meat's products usually cost more than animal-based meat. Moreover, a Deloitte report reveals that "the addressable market" for plant-based companies is much smaller than companies think, highlighting that many customers see Beyond Meat and others as too "woke." Despite the noise around the sinking stock price of one company, restaurant operators continue to experiment with fake meat products that are under continuing development. ◘

# Regulatory

## Mexico's poultry sector urges to redefine AI regulations

*September 27, 2022 at WattAgNet.com by Benjamin Ruiz*

With 25-year-old regulations in place in Mexico, is it time to change those regulations and decide whether to live with avian influenza or eradicate it? *Click here for full article* ◘

## Elanco: Real or not, climate change can't be ignored

*September 27, 2022 at WattAgNet.com by Roy Graber*

The debate over whether climate change is real or not should be immaterial to those in agrifood production, Elanco president Jeff Simmons said while speaking at the Ag Outlook Forum on September 26. *Click here for full article* ◘

## Senators request 180-day extension for USDA poultry contracting rule

*November 22, 2022 at MeatPoultry.com by Rachael Oatman*

Comments on the proposed rule are currently due by Dec. 2, 2022. *Click here for full article* ◘

## EPA Required to Respond to Petition Over CAFOs

*October 26, 2022 at Egg-News.com by Simon M. Shane*

Food and Water Watch and kindred activists' environmental organizations filed a petition in May 2017 regarding point source pollution emanating from concentrated animal feeding operations (CAFOs). In addition, the petitioners requested details on how EPA would limit discharges. In a filing with the Ninth Circuit on October 11th, the petitioners requested a writ of mandamus to compel the EPA to respond to the original petition within 90 days.

A three-judge panel of the U.S. Court of Appeals for the Ninth Circuit ruled that the petition "raised the issues and warrant an answer issuing a Writ compelling the EPA to respond."

Concerted action by environmental activists' groups will evoke some action by the EPA after four years of stonewalling, ignoring the petition. It is certain that operators of CAFOs who are contravening environmental regulations will be identified and compelled to cease contamination and comply with the Clean Water Act. ◘

## No difference in air quality at poultry farms, urban areas

*November 8, 2022 at WattAgNet.com by Elizabeth Doughman*

There is little variation in the average air pollution levels of regions with a high density of poultry farms compared to urban areas on the Eastern Shore of Maryland, revealed preliminary data from the Lower Eastern Shore Air Monitoring Project. *Click here for full article* ◘

## NCC comments on USDA indemnity regulations proposed rule

*November 11, 2022 in Animal Health by Tom Super*

The National Chicken Council this week provided comments to USDA's Animal and Plant Health Inspection Service (APHIS) on its proposed rule about indemnity regulations. *Click here for full article* ◘

## NCC comments on USDA organic poultry proposed rule

*November 11, 2022 in Organic Food by Josh Ricken*

NCC on Thursday filed comments on USDA's Organic Livestock and Poultry Standards proposed rule. The proposed rule, first announced in August, would change USDA organic regulations including requirements for organic poultry and livestock living conditions, care, transport, and slaughter. *Click here for full article* ◘

## UK: Judicial Review Challenging the Use of Fast-Growing Broilers Granted

*May 10, 2022 at PoultryWorld.net by Tony McDougal*

Animal welfare campaigners have been celebrating following the decision in the UK's High Court to grant a full hearing into a challenge against the government over the legality of fast-growing broilers. Appeal Court judge, Lord Justice Singh, said a full hearing of the facts regarding fast-growing birds was in the public interest, making it one of the 5% of judicial reviews which, one deemed arguable, is granted a full hearing. *Click here for full article* ◘



## Feed industry urges FDA to update its regulatory policy

*November 21, 2022 at MeatPoultry.com by Arvin Donley*

AFIA says feed ingredients with environmental or production claims must make it to market in a timely way. *Click here for full article* ◘

## *Regulatory*

### Swiss Voters Express Opposition Against Proposal to Ban Factory Farming

*September 30, 2022 at eFeedlink.com*

Voters in Switzerland rejected on September 25 a proposal to ban factory farming in a referendum on whether the country's strict animal welfare laws need to be tightened further. The government's VoteInfo App showed a provisional result of 62.86% of votes against the proposal, put to a referendum under the Swiss system of direct democracy, to make protecting the dignity of farm animals such as cattle, chickens and pigs a constitutional requirement. *Click here for full article* ◘

## How much does it cost to feed a rat?

*September 9, 2022 at ThePoultrySite.com by Hog Slat / Georgia Poultry*

Livestock and poultry production facilities are almost the perfect home for rodents with unlimited food, water, and shelter. Finding an operation without at least a minor rodent infestation would be rare.

The typical adult rat consumes about one ounce of feed per day or 23 pounds per year. They also often contaminate more than they eat, bringing the total loss as high as two ounces per day or 46 pounds annually.

**At $300 per ton, it could easily cost a farm over $6.90 per rat per year!**

Because rodent activity is nocturnal, producers typically underestimate a farm's rodent population.

An article from Mississippi State University's MSU Cares project listed the following as some rules of thumb to determine rodent populations:

- Signs seen but no rodents seen - 1 to 100 on the premises.
- Occasional sightings at night - 100 to 500 on the premises.
- Nightly sightings and occasional daytime sightings - 500 to 1,000 on the premises.
- Several seen during the day - up to 5,000 on the premises.

**Even a modest infestation of 100 rats could mean a loss of over 2.3 tons of feed per year.**

This figure does not include the negative impact on the grower's feed conversion and ranking on a settlement sheet. It also does not consider the damage to the building, including potential fire hazards from rodents gnawing on electrical wiring, undermining foundations, and damage to cool cells.

Producers think of rodent control during the annual migration in the fall. Rodent populations exist year-round, and control efforts must continue through spring and summer. Our example of a modest number of 100 rats could quickly expand into the thousands if left unchecked.

**Steps you can take now to strengthen your rodent control program.**

1) Identify the population. Because rodents are the most active at night, particularly the 1/2 hour after sunset and 1/2 hour before sunrise, get a good flashlight and visually check for rats and mice. Rodent populations tend to exist on multiple levels, so inspect the attic.

2) Create a clean border around the buildings to eliminate available shelter. Spray for weeds outside and remove boxes and bags inside.

3) Follow a year-round baiting program changing the active ingredients and bait textures. This rotation helps to reduce bait resistance. Click to view a sample bait rotation chart.

Rodent control is a year-round process. Failure to keep populations under control means higher production costs, especially with high feed costs. Click to view rodenticides and bait stations. ◘

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## Maintain Poultry House Equipment for Optimal Bird Health This Winter

*Submitted November 11, 2022 by Cumberland*

Proper ventilation is key to poultry health and productivity. Randy Stidham, Cumberland district manager, offers equipment maintenance recommendations to help provide an ideal environment for poultry houses during cold weather.

“First and foremost is making sure that all equipment is in proper working order,” he says. That includes:

- **Shutters** – Clean dust and debris from shutters and ensure they are properly opening and shutting. Avoid having them stick due to maintenance issues.
- **Fans** – Make sure minimum ventilation fans are clean and perform correctly, as they operate less during the winter. “A fan that is underperforming will need to run longer, exposing the birds to cold air and poor ventilation,” Stidham said.
- **Ventilation boards** – Check that these open and close properly for incoming air. “Be sure there is a protective screen or bird wire that is free of dust or feathers, so that the passageway is completely open,” he added.
- **Humidity** – Avoid moisture buildup that can cause wet litter and raise ammonia levels. Monitor and maintain proper humidity levels through ventilation and temperature control.
- **Temperature sensors** – Calibrate temperature sensors tied to controllers to make sure they are accurate and maintain desired temperatures in the house.
- **Heaters** – Inspect heaters to make sure they are in proper working order. Clean heaters on the outside and remove built-up dust on the inside, which can cause problems. Dirty heaters can cause air and gas mixture problems, resulting in the heater not operating to its full potential.
- **Stir fans** – Properly using stir fans can achieve better performance and also energy savings. “These and other seasonal maintenance steps can go a long way to ensuring a healthier environment that enables birds to reach their full potential,” Stidham said.

For more information, poultry producers can contact their equipment dealer or visit www.cumberlandpoultry.com. ◘

## Gold Creek Foods reopening former George's plant

*October 27, 2022 at WattAgNet.com by Roy Graber*

(Chicken further processing planned for Caryville, TN, north of Knoxville)

*Campos Foods facility purchased by George's in 2017 will become a poultry further processing plant under the ownership of Gold Creek Foods*

Gold Creek Foods (GCF) plans to reopen the former Campos Foods plant in Caryville, Tennessee, which closed earlier this year.

According to a press release from Tennessee Gov. Bill Lee, GCF is investing $15 million to establish operations at the facility, creating 218 new jobs. Following the acquisition of the property, which was most recently owned by George's Inc., the plant will be updated and converted into a poultry further processing facility.

"We already have been so impressed with the dedication and resiliency of the eastern Tennessee workforce on our frequent visits, as well as the continued recognition and acceptance of the Quick'N Eat brand in the market," said Mark Sosebee, CEO of GCF. "We are excited about our expansion and investment in Campbell County, as well as Gold Creek Foods continuing the Quick'N Eat brand that was produced in the Caryville facility previously."

The process of hiring a workforce for the plant has begun, and full production at the plant is expected to be reached by February 23.

"I thank Gold Creek Foods for placing its trust in Tennessee and strengthening our position as one of the fastest growing states in the country. This significant investment in Campbell County will create more than 200 jobs for Tennesseans, and I look forward to seeing how the region is positively impacted in the years to come," Lee said.

George's acquired the plant and the other assets of Campos Foods in November 2017 from Lopez Foods before closing it earlier this year. When contacted by WATT Global Media, George's chose not to comment on the sale of the facility.

Founded in 2000 and headquartered in Gainesville, Georgia, Gold Creek Foods is one of the nation's largest full-well-known customers nationwide. With the addition of the Caryville plant, the company will employ more than 3,500 people across its operations in Georgia and Tennessee.

GCF's acquisition of the Campos Foods facility follows the company's acquisition of Foundation Food Group, which was announced in September 2021. Foundation Food Group, which formed through the merger of Prime Pak Foods and Victory Processing, gained national attention in 2021, as one of its facilities was the site of a liquid nitrogen leak that led to the deaths of six people, as well as the hospitalization of numerous other workers. □

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## Sutton Promoted to Assistant Commissioner for Consumer and Industry Services Division

**NASHVILLE** – The Tennessee Department of Agriculture (TDA) announces the promotion of Danny Sutton to Assistant Commissioner for Consumer and Industry Services (CIS).

Sutton has served as CIS Director since 2019, tasked with managing regulatory programs affecting consumer protection and safety.

"Danny has been an exceptional staff member and leader at TDA for more than a decade," Agriculture Commissioner Charlie Hatcher, D.V.M. said. "He consistently advocates for education before regulation. He's built our regulatory outreach on relationships, both internally and externally. He strives to achieve the highest customer level in each area he oversees."

The CIS Division administers programs, testing, and licensing for food and dairy; weights and measures; fuel quality; feed, seed, and fertilizers; grain dealers and warehouses; pesticides; plant health; and prevention of youth access to tobacco.

"I am proud to be part of Commissioner Hatcher's leadership team at TDA," Sutton said. "The work that Consumer and Industry Services accomplishes assures fairness in the marketplace and safety for every citizen of Tennessee. It has been, and will continue to be, a privilege to serve with the people with this responsibility and to be part of the guiding force of these efforts."

Sutton joined TDA in 2006 in the Weights and Measures Section. He transitioned to the Food and Dairy Section in 2012 and was named Dairy Administrator in 2017. The next year, Sutton's achievements for the dairy industry resulted in being chosen for the Governor's Excellence in Service Award. Sutton and CIS staff continue to raise awareness of the importance of education and regulation in providing safe dairy products.

Sutton is a graduate of Middle Tennessee State University where he earned his B.S. in Animal Science. He completed graduate work in Animal Reproduction at the University of Tennessee where he worked as a research assistant. Sutton and his wife, Carmen, live in Franklin, Tenn. They have three children and will soon welcome a third grandchild. □

## Commodity Report

*December 2, 2022 at Egg-News.com by Dr. Simon M. Shane*

Over the past five trading days commodities were little changed. December corn was down 0.8 percent to 658 cents per bushel for December 2022 delivery. In contrast soybeans were up 2.0 percent compared to the previous week to 1,465 cents per bushel for January 2023 delivery. The market has adjusted to the projections of crop size and ending stocks as documented in the November 9th WASDE #630. Despite fluctuating economic sentiment, restoration of shipping from Black Sea ports has reduced price pressure on wheat and other grains although revocation by Russia or some adverse marine incident is always possible. Commodity prices in the U.S. were influenced by a stable but high Dollar Index of 106 and a surge in orders placed by China and other importers.

Factors influencing commodity prices in either direction over the past four weeks included:

- Renewed fears of a U.S. recession have waned. A speech by Federal Reserve Chair, Jerome Powell suggested moderation in the rate of increase for successive future monthly interest rate determinations by the FOMC. A rebound in equity markets was evident during the past three weeks albeit with inter-day fluctuations. (Transitory upward pressure on markets)
- A reduction in the October CPI to 0.4 percent compared to 0.8 percent for September suggests that inflation may have plateaued. (Downward pressure)
- Low water levels along the Mississippi River and tributaries caused by drought is still impeding barge traffic. A rail strike tentatively scheduled for December 10th will not occur following Congressional intervention. (Downward pressure and lower cash prices paid to farmers)
- Geopolitical tensions that impacted wheat, corn, oilseeds and vegetable oil exports from Ukraine persist. Restoration of Black Sea shipping was accomplished following security guarantees by Ukraine to the Russian Federation. Russia has inflicted extensive and deliberate damage on the agricultural and energy infrastructure of Ukraine including elevators and crushing plants and has placed landmines in fields. Ukraine corn yield for 2022 is down 18 percent from 2021 with 39 percent of the crop harvested as of November 17th. (Upward pressure on corn and wheat and an indirect effect on soybeans if Black Sea shipping is interrupted.)
- Expectation of high soybean and corn crops from Brazil for the 2022-2023 season. (Lower prices in the future subject to favorable reports on crop progress and actual harvests)
- Volatility of the Dollar Index (DXY) that stood at 101 on June 2nd peaking at 116 in late October but declining to 106 on November 30th the dollar index influences timing and volume of export orders. (fluctuation in corn and soybean prices, high value depresses U.S. sales)
- Speculation in commodities by hedge funds increased consistent with rising equity prices in October and November possibly affected by a steady decline in the value of cryptocurrency due to inadequate regulation. Concerns over a U.S. recession that reemerged in early October, have receded as the Federal Reserve may moderate the intensity of raising benchmark funds rates to suppress inflation. (Downward pressure)

Based on CME quotations on November 23rd U.S. farmers are now receiving and conversely livestock producers and ethanol refiners in the Midwest will pay above $6.58 per bushel for corn delivered in December, down 0.8 percent from the quotation last week. Crushers will pay $14.65 per bushel for soybeans plus transport and basis for January 2023 delivery, up 2.0 percent from the previous week. December soybean meal was 1.7 percent higher compared to the quotation last week. Prices continued their moderate inter-day fluctuation and corn reversed the upward trend from the previous week. Soybeans were up reflecting both domestic and export demand, projected new-crop harvest and ending stocks. *Click here for the rest of the article* □





# Poultry farming and good neighbor relations: coexistence is possible

*September 2022 by Tom Tabler, Victoria Ayers, Pramir Maharjan, Shawn Hawkins, Yi Liang, Jessica Wells, Jorge Urrutia*

There are benefits for poultry producers to take the time to develop and maintain good relationships with their neighbors and county and local municipal governments. The rural landscape in Tennessee is becoming more fragmented and is demographically changing while the poultry industry continues to expand, so the value of good neighbor relationships is more important now than ever. It does take time for poultry producers to get to know their neighbors and local officials, but it also presents an opportunity to discuss the needs and requirements of all modern farming operations. It also gives poultry producers a chance to be involved in the community and be accessible as a contact for people when they have concerns about poultry farms. This time can prove just as valuable as caring for your poultry flock because of fewer neighbor disputes and greater community support of farming enterprises. Such efforts by the farming community can also pay dividends in the form of a more positive picture of poultry farming and provide insight into the important role individual Tennessee poultry farmers play in feeding America and the rest of the world. Today, one U.S. farm feeds 166 people annually in the U.S. and abroad (AFBF, 2022). This is important knowledge for the public because the global population is expected to reach around 10 billion people by 2050. This means the world's farmers will have to grow about 70 percent more food than what is now produced.

**Litigation resulting from a changing rural landscape**

Some of the farmers responsible for reaching this lofty goal will raise poultry on commercial farms in the U.S. but not all of them will enjoy the benefit of good neighbor relations. Residential growth often comes in the form of new residents wishing to escape a hectic city pace. These folks are often drawn to the countryside by what they may envision as a nostalgic agricultural setting that, in most cases, no longer exists. These new neighbors may be unfamiliar and, perhaps, unsympathetic to typical farming practices essential to maintaining a viable farming operation. Often, individuals who have never been exposed to production agriculture will complain about a poultry farm's noise, dust, odor, litter application or especially the construction of new poultry houses. Today the demographics of many rural areas of Tennessee are changing rapidly and becoming more suburbanized. In addition, increased public awareness of environmental sustainability has heightened as the geographic consolidation of agricultural production creates a concentration of agricultural wastes. Such suburban expansion consumes large amounts of the nation's farmland (Ritz, 2010). As previously rural areas become increasingly developed, local leaders and municipalities previously familiar with the ordinary sights, sounds and smells of farming operations fade away. What's left is the fact that few people outside the agricultural community understand commercial farming practices that are necessarily employed by modern-day poultry farmers to maximize efficiency and minimize consumer cost.

**Legal ramifications**

Many people leaving the city hoping to enjoy their perhaps somewhat unrealistic version of the country lifestyle are unaware that common modern-day farming practices do not match their vision of country living. As a result, conflicts can arise between poultry growers and their new neighbors. Neighbors may believe the farm next door is destroying the pastoral lifestyle they moved to the country to enjoy. In turn, farmers may decide their new neighbors have a serious misunderstanding of what it takes to put supper on the table each evening and an extreme lack of knowledge as to where their food comes from.

These differences, left unchecked, may lead to legal action where only the lawyers will come out winners in the end. Time and money are wasted, and the mental and physical health of everyone is affected by the toll that stress takes on all parties involved. In some cases, farmers may find it difficult to expand or remain in operation (Cunningham, 2012). However, Tennessee, like every other state, has a Right-to-Farm Statute summarized in Figure 1 that provides farmers some lawsuit protection (National Agricultural Law Center, 2020).

*Figure 1. Summarized Tennessee Right-to-Farm statute.*

**§ 43-26-101. Short title**

This chapter shall be known and may be cited as the "Tennessee Right to Farm Act."

**§ 43-26-102. Chapter definitions**

As used in this chapter, unless the context otherwise requires:

(1) "Farm" means the land, buildings, and machinery used in the commercial production of farm products and nursery stock as defined in § 70-8-303;

(2) "Farm operation" means a condition or activity that occurs on a farm in connection with the commercial production of farm products or nursery stock as defined in § 70-8-303, and includes, but is not limited to: marketed produce at roadside stands or farm markets; noise; odors; dust; fumes; operation of machinery and irrigation pumps; ground and aerial seeding and spraying; the application of chemical fertilizers, conditioners, insecticides, pesticides, and herbicides; the employment and use of labor; marketing of farm products in conjunction with the production of farm products thereof; and any other form of agriculture as defined in § 43-1-113;

and (3) "Farm product" means those plants and animals useful to man and includes, but is not limited to, forages and sod crops; grains and feed crops; dairy and dairy products; poultry and poultry products; livestock, including breeding and grazing; fruits; vegetables; flowers; seeds; grasses; hemp, as defined in § 43-27-101; trees; fish; apiaries; equine and other similar products; or any other product that incorporates the use of food, feed, fiber or fur.

(4) [Deleted by 2019 amendment.]

**§43-26-103. Farms presumed not nuisances**

(a) It is a rebuttable presumption that a farm or farm operation is not a public or private nuisance. The presumption created by this subsection (a) may be overcome only if the person claiming a public or private nuisance establishes by a preponderance of the evidence that either: (1) The farm operation, based on expert testimony, does not conform to generally accepted agricultural practices; or

(2) The farm or farm operation alleged to cause the nuisance does not comply with any applicable statute or rule, including without limitation statutes and rules administered by the department of agriculture or the department of environment and conservation.

*Continued on next page*

## Poultry farming and good neighbor relations: coexistence is possible *(continued from previous page)*

The Tennessee Right to Farm Act helps protect responsible farms against nuisance lawsuits and overly restrictive local regulations. However, in many cases the best right-to-farm protection is no more than **common sense and being a good neighbor**. Whenever possible, it is much easier and less expensive to prevent disputes before they arise and handle them quickly and efficiently if they do occur. Maintaining good relationships with neighbors make this possible.

**Little things are important**

Many Tennessee citizens don't realize that the poultry industry is an important part of our agricultural economy. In fact, broiler chickens are ranked third, behind soybeans (1) and cattle and calves (2), on the list of Tennessee's top agricultural commodities (TN Dept. of Ag., 2021). You can find additional information to share about Tennessee's poultry industry using the links below:

- https://poultry.guerrillaeconomics.net/reports/b9ab007f-3eea-496c-9b55-3fdedf574338?
- https://www.tn.gov/content/dam/tn/agriculture/documents/annualreports/2019-2020%20BiennialReport_8.5x11%20-%2011.9.21.pdf
- https://www.nass.usda.gov/Statistics_by_State/Tennessee/Publications/County_Estimates/2021/index.php

**Simple ways to prevent problems**

There are simple things poultry producers can do to prevent conflicts with neighbors from getting out of hand. **Good communication is one of the best strategies for reducing conflicts.** Neighbors may not always become good friends but it's important to make acquaintances. People that know each other are more likely to approach each other and try to solve potential conflicts as they arise. Poultry growers should make it a point to visit neighbors on occasion, particularly if farm activities (spreading litter, nighttime catch) could soon affect plans your neighbors may have. It's better to let them know ahead of time rather than have them surprised and awakened when the catch crew and live-haul trucks start rolling in at 2 a.m. By visiting with them and keeping neighbors informed, it is less likely that issues will escalate and get out of hand. Fewer conflicts arise when good relationships are established with neighbors. Being a good neighbor yourself and treating people with respect, accommodating neighbors whenever possible and helping when neighborly help is needed can lay the groundwork for successful relationships.

Recognize that operating a poultry farm comes with multiple challenges besides the day-to-day farm management requirements. There are **numerous people that smell with their eyes** instead of their noses. Manage a clean, neat, well-run operation, because that is one of the best ways to reduce complaints. Your neighbors will often be more tolerant of dust or odor from a well-managed operation than from an untidy one. It requires extra time and effort to keep the grass mowed on a regular basis and maintain a farm with a well-groomed appearance, but this neat appearance will be well worth the effort from a public relations standpoint.

**Ultimately, most of your neighbors are also your customers** because they purchase the very poultry products you are growing on your farm. Poultry farming is a business, and businesses need happy customers. A few commonsense practices can go a long way toward fostering good relations and keeping neighbors (and customers) happy. If neighbors are gardeners, some free chicken litter for their garden is often a welcome gesture. The amount may seem a small gesture since you'll have many tons of litter on the farm, but the gesture can be huge and promote additional good will and friendship, as well as a better understanding of the beneficial use for poultry litter applied to nearby crops and forages. Help out, for example, by smoothing a neighbor's driveway with your tractor and blade or front-end loader or removing snow in the winter. This can earn you much good will. If a compliant does arise, address it quickly and tactfully. Be sympathetic and realize that there may be times when, for the sake of the farm, it is best to apologize and offer to be more accommodating in the future. Apologizing may help to diffuse the situation and perhaps even prevent legal action in the future.

Many times, particularly for those individuals that tend to smell with their eyes, **out of sight is out of mind**. Consider screening the poultry houses from public view. Vegetative airshed buffers and windbreaks are old technologies that have many benefits for today's tunnel-ventilated poultry houses (Tabler and Liang, 2008; Tabler et al., 2022). Also, **consider pollinator plots** to benefit bees and other pollinators and reduce the amount of mowing required during the summer. Include a variety of wildflowers to attract pollinators which also directs attention away from the chicken houses. Then, don't worry about mowing the pollinator plot area until after the first frost in the fall.

**Mortality management**

One of the two most common complaints received by University of Tennessee Extension is improper mortality management. **Mortality disposal** is a critical management point area where poultry farmers must be vigilant about how their practices may affect public perception. Improper mortality disposal is simply not something neighbors or the general public will tolerate. Proper handling of mortalities begins immediately upon removal from the chicken house. Do not toss dead birds outside the chicken house door and leave them extended periods of time for the neighbor's dog to find and drag back home. If you use a composter, **make sure mortalities are always adequately covered. Cover prevents nuisance flies** and animals and vultures from digging carcasses out. Once they learn that a free meal is there, it is extremely difficult to prevent them from digging it. Large numbers of vultures are seen by your neighbors, particularly those with beef cattle, as more than just a nuisance. Finally, optimize your compost performance using a compost thermometer on a regular basis. Temperature should be in the 120 degrees F range as the bin is filling and may reach 130 to 150 degrees F as the carcasses are broken down. After the flock is harvested and you're no longer adding birds daily, peak temperatures will fall back to the 100 to 120 degrees F range (may take two to three weeks) in a bin composter. At this point, the material is ready to turn out of the bin to re-supply oxygen to the microbes for further decomposition. With alleyway composters, if the windrow is constructed properly (proper moisture content, proper C:N ratio, adequate air infiltration through the material, etc.), the decomposition process will continue without turning. *continued on next page*

## Poultry farming and good neighbor relations: coexistence is possible *(continued from previous page)*

If you use a mortality incinerator, use a fast, hot burn to rapidly dispose of the carcasses. A slow burn allows the carcasses to smolder longer, generating increased odor**. Incinerators with afterburners usually generate fewer complaints**. The afterburner reburns the smoke particles which contain odorants, thereby lessening the amount of odor released. If possible, burn carcasses during the day, not early morning or evening when the air is still, more humid and heavier, which allows odor to stay concentrated and hang closer to the ground instead of rising and dissipating.

**Land applying litter**

Another common compliant received by UT Extension is odor when litter is land applied. It is inevitable that spreading litter will generate dust and odor for at least short periods of time. **Plan litter applications carefully so that concentrated odors do not reach neighboring property lines**. Often, strong odor is assumed by neighbors to indicate that litter application rates are way too high, in essence an illegal disposal practice. Many poultry producers do not realize that **complaints to TDEC, which are often first focused on odor, transition to improper waste disposal accusations which require an inspection/site visit**. To avoid this scenario, first make neighbors aware that soon you will be spreading litter to fertilize a particular field in the future. You can protect yourself from accusations of over-applying by utilizing UT Extension publication Litter Land Application Management W 796, a simple worksheet to calculate agronomic litter application rates for a particular field and crop. On the day you spread, check wind direction and make sure rain is not expected within 48 hours. It's best to spread during the hot part of the day when most people are at work so that the sun can dry and reduce odor before everyone gets home. Do not spread litter early in the morning and late evening when the air is still and the humidity is high because odor will not disperse but tend to hold near the ground. Be careful and considerate and give yourself enough buffer (50 feet) so there is no chance that your equipment will place litter onto roads or highways or onto a neighboring property.

Education is key for both farm and nonfarm populations. Farmers are busy trying to manage their operations and keep the farm solvent in today's challenging economic times. Faced with increasing governmental rules and regulations in some regions of the country, high fuel prices, extreme weather conditions, and other challenges, farmers may fail to realize that most people today are generations removed from the farm and do not understand what it takes to be successful in agriculture. On the other hand, the non-farming public does not comprehend the stresses and demands of farming and the sacrifices farmers make to put food on the table for everyone and, as a result, these individuals may be intolerant and unwilling to accept the occasional noise, dust, odor and other inconveniences that farming practices cause them.

**Summary**

Most people today did not grow up on or near a farm and are unfamiliar with typical farming practices. Often, it is this lack of knowledge or information on modern farming practices and techniques that leads to complaints. However, it's this lack of knowledge that offers a valuable teaching moment for the agriculture community, including the poultry industry. While keeping biosecurity as a top priority, the industry and its growers should seek out opportunities to educate neighbors and others on poultry farming practices and agriculture in general. This may help address problems before they arise as people may be less likely to complain if they understand that there is **sound scientific principle behind what farmers do** and that they're not just managing their farms carelessly and being inconsiderate. Also, while actions taken to manage the farm are important, farmers should not forget that **becoming involved in community-level activities** can improve farm-nonfarm relationships (Kelsey and Abdalla, 2008). **Serving on the ag committee** of the local Chamber of Commerce or **ag advisory board** of your local bank can put poultry farms in a helpful position to inform the public about the needs of farmers and agriculture in general. Assisting local agricultural organizations with educational activities and outreach programs for non-farmers also promotes the critical role of agriculture and farmers in every community. *References available.* □

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## Neglecting poultry drinking water quality can prove costly

UTEXTENSION INSTITUTE OF AGRICULTURE THE UNIVERSITY OF TENNESSEE

*November 2022 by Tom Tabler, Shawn Hawkins, Pramir Maharjan, Yi Liang, Jessica Wells, Jonathan Moon*

Drinking water with adequate physical, chemical, and microbiological quality in the poultry industry is of critical importance in today's "No Antibiotics Ever" (NAE) production environment. On many commercial poultry farms today, well over 100,000 broilers may have access to the same water supply source each time a flock is placed; therefore, any water quality issues with the farm's water supply will affect large numbers of birds. Drinking water can play a pivotal role in the transmission of some of the most common and dangerous bacterial, viral, and protozoan poultry diseases. Water has always been the most vital — but also the most neglected— nutrient in terms of flock performance in the poultry industry. The cost of neglecting poultry water quality can be high. Water is a major component of blood, plays an important role in transporting nutrients to cells and is vital to removing waste products. A chicken's body is 70 percent water, and a loss of 10 percent of this water will result in the bird's death. Water also plays a primary role in digestion and respiration, both which are critical to thermoregulation. Broiler performance is determined by a variety of factors including feed, genetics, health status, air quality and house environment, and management practices, but in today's NAE landscape, drinking water quality may be the factor of greatest importance and the one most often overlooked.

### Importance of water quality

NAE production programs highlight the importance of poultry drinking water and the high cost of neglecting the quality of this vital nutrient. We are being reminded that poultry drinking water quality is more important than we once thought. *continued on next page*

## Neglecting poultry drinking water quality can prove costly *(continued from previous page)*

Previous use of antibiotics covered up management mistakes that allowed us to become lax in our monitoring of water quality. However, today's NAE programs are not forgiving of management mistakes, and, in many cases today, the bill has come due for past complacency with poultry drinking water quality issues.

In the past, we may have been able to medicate our way around a poor water quality issue. In the NAE world of today, there are consequences for ignoring these issues that can no longer be overcome with antibiotics. Water plays a role in every aspect of animal metabolism, and the absence of antibiotics in NAE programs has revealed several underlying issues. These issues likely have been present for some time but were being masked by previous antibiotic use and were either unknown or considered unimportant. Issues with water that can affect our flocks include:

- Poor flock performance (high feed conversion ratios, low weight gain)
- Enteric issues (excessive feed passage, gut sloughing, loose droppings)
- Low water intake (resulting in low feed intake)
- Disease issues flock after flock
- High mortality rates

A little antibiotic at the hatchery and in the feed was a powerful tool to provide flock protection for many years; however, mounting concern over antibiotic resistance and increasing consumer demands for chicken raised without antibiotics has changed today's poultry production landscape. As a result, the poultry industry has a big empty space in its toolbox created by the removal of antibiotics. Currently, there is a flood of new products appearing on the market, hoping to fill in that empty space and recapture some of what was lost when antibiotics were removed. The easiest delivery method for many of these products is in the drinking water system. Consequently, we are seeing a significant increase in water line and drinker system issues.

**Water intake**

Chickens normally consume approximately twice as much water as feed on a weight basis during normal environmental conditions, with consumption increasing linearly as ambient temperature increases above normal. Water consumption in poultry is dependent on several factors:

- Feed intake (reduced feed intake leads to reduced water intake and vice versa)
- Ambient temperature (water intake increases as temperature increases and vice versa)
- Contaminated water (mineral or bacterial issues can lead to decreased water intake)
- Warm water (water that comes from the well at too high a temperature or heats inside the drinker line during hot conditions may reduce intake)
- Type of drinkers (some systems supply more water faster than others)
- Drinker line height (lines that are too low or too high will reduce water intake)
- Water pressure (supply line and drinker line regulator pressure that is too high or low will affect water intake)

Drinkers should be checked regularly to ensure they are working properly. Leaking drinkers require immediate attention to prevent further issues and protect litter quality. Drinker system maintenance is a must, and systems must be cleaned and flushed regularly to remove any microbial or mineral build-up in the lines. A more thorough line cleaning and disinfecting with a higher sanitizer residual concentration may be necessary between flocks without birds present when stronger products can be used in the drinker system. Be sure to flush the lines with fresh clean water or water with an acceptable sanitizer residual concentration before birds are placed.

**Taste, color and odor**

There is likely no such thing as pure drinking water. There is always something in the water your chickens are drinking, and it's important to know what that is and at what level. If you don't know what's in your water, have it tested. A $20 water sample is cheap insurance to know that your birds are drinking safe water. The water your chickens are drinking has a mineral profile that may or may not be harmful to them. It is important that drinking water be clear, tasteless, colorless and odorless. Contaminated water often exhibits different characteristics depending on the quantity and type of contaminants present.

- Water will appear cloudy or murky in the presence of particles such as silt, clay, mud or organic material. Water with these or other suspended particles can interfere with operation of the drinker system and may lead to adverse effects on flock performance.
- A rotten egg smell indicates the presence of hydrogen sulfide in the water. Hydrogen sulfide may combine with iron and form a black precipitate (iron sulfide) in the bottom of the water filter canister, which can also indicate the presence of sulfate-reducing bacteria.
- A reddish-brown color to water may indicate the presence iron.
- A blue color can be an indication of excess copper in water.
- Different salts can affect the taste of water. Ferrous and manganese sulfates leave a bitter taste to water.

Minerals occur naturally in most water sources and are necessary for life; however, some minerals in excess amounts can affect bird health and water line performance. Often overlooked, minerals can have a large effect on many areas of water quality. Poultry farms in Tennessee that have well water sources should pay attention to the mineral the mineral profile and dissolved solids concentration in poultry drinking water supplies due the presence of karst landscape in much of the state. *continued on next page*

## Neglecting poultry drinking water quality can prove costly *(continued from previous page)*

Iron alone may not cause bird health issues, but it can be a food source for bacteria, particularly E. coli. In addition, most iron-loving bacteria produce a type of slime that can build up in pressure-reducing regulator screens, filters, pressure tanks, in-house drinker line regulators, drinker lines and nipple drinkers. Sulfur can damage the bird's intestines, resulting in flushing, feed passage and a lack of nutrient absorption. Bacteria break down sulfur, creating hydrogen sulfide gas, which is extremely corrosive. This can happen in the well, in the water lines or in the bird. Iron and sulfur support bacteria that thrive as water temperature increases. The less disturbed the water environment, the more established the bacterial population becomes. Therefore, the first few weeks of the flock, when water is at its warmest and slowest flow rate, is a critical period for bacterial growth in the lines. Other minerals may also affect performance, including:

- Sodium + chloride (salt): flushing and diarrhea
- Magnesium: laxative effect, excess feed passage
- Zinc: astringent taste
- Nickel: heart and liver damage
- Lead: developmental issues, long-term performance issues in broiler breeders

Many times, growers fail to consider that zinc is often in the coating of the sheet iron on the chicken house. If the well is right beside the chicken house (Figures 1 and 2), is it possible that rainwater off the roof may move down the wellhead and carry zinc into the aquifer?

*Figures 1 and 2. Can rainwater off the poultry house roof find its way down the wellhead and into the aquifer below?*

Calcium and magnesium can form scale build-up in the water lines. If these minerals are present, it's important to descale the water lines once per year. Use an approved acid solution to get the pH of the water down to 5 or below, or scale won't dissolve. Let the solution remain in the lines for 24 hours, then flush all lines thoroughly with fresh water and trigger all the nipples. Realize that long-term use of acids without a water treatment program supports the growth of acid-loving algae, fungi, molds and yeasts. Acid use should be followed with a water treatment program. Depending on the condition of your water source, it may be necessary to consider a continuous daily water treatment program with hydrogen peroxide or chlorine. Make sure you monitor the sanitizer residual concentration at the end of the water lines. If you are using a chlorine-based sanitizer product, your target residual concentration should be 3 to 5 ppm, even though 1 ppm has been reported to be effective under a daily water sanitation program. For hydrogen peroxide– based products, 25 to 50 ppm is considered an effective residual concentration.

### Bacteria and other creatures

Poultry houses are known to grow many other things besides chickens, particularly inside the watering system, such as:

- Salmonella
- Campylobacter
- Pseudomonas
- Staphylococcus
- E. coli
- Listeria
- Algae
- Yeasts
- Molds
- Viruses
- Parasites
- Enteric bacteria

Presence of bacteria in the water may be an indication of contamination with organic material. Water is often tested for total bacteria load and coliform bacteria load. Presence of coliform bacteria in drinking water indicates fecal contamination resulting from runoff to surface ground water supplies as coliform bacteria are generally found in the digestive tract of humans, livestock and birds. Algae and fungi can build up in the drinker lines, restrict the flow of water and clog the nipples. Bacteria can make the flock sick.

Water quality can change with the seasons, depending on the location and source of the water. In addition, the warm broiler house environment is ideal for rapid replication of microorganisms inside the water system. This can lead to biofilm formation in water lines and regulators. Biofilms are composed of many different types of bacteria and other organisms that live together in a sticky film inside the water lines. Biofilms live on very little nutrients and can cause disease issues flock after flock as bacteria are continuously released from the biofilm. Biofilms are very difficult to remove once established and provide a breeding ground where microorganisms can multiply. In addition, the biofilm protects the "bad bugs" from antibacterial agents that producers may use to clean the water lines. Regardless of the daily water sanitation program in place on the farm, a certain level of biofilm may still grow in the water system at the end of the flock growout period. Therefore, consider it necessary to clean water lines between flocks before the next flock is placed.

### Water characteristics

The pH level is a measure of the acidity or alkalinity of water. A scale of 0 to 14 is used to measure pH, with 7 being neutral, neither acidic nor alkaline. Poultry drinking water that is too acidic can affect digestion and feed passage, corrode watering equipment and impair the use of water-soluble vaccines/medications. Poultry prefer water with a pH in the range of 6.2 to 6.8 but can tolerate a pH range of 5 to 8; however, water with a pH of less than 5 or greater than 8 may negatively impact chicken performance. *continued on next page*

## Neglecting poultry drinking water quality can prove costly *(continued from previous page)*

**Hardness**

Hardness refers to the amount of dissolved minerals, such as calcium and magnesium, in water. High levels of these dissolved minerals result in hard water and can cause buildup of scale in water lines. Hardness reduces the effectiveness of cleaners and disinfectants used in cleaning and disinfecting poultry barns and can interfere with administration of some medications. Hard water has not been proven to directly affect (either positively or negatively) poultry performance; however, it can adversely affect the watering system and equipment.

**Nitrates and nitrites**

Nitrogen contamination of poultry drinking water most often occurs in the form of nitrates and nitrites. Nitrate ($NO_3$) is produced during the process of decomposition of organic matter. Nitrite ($NO_2$) results during intermediate stages of decomposition of organic compounds. Water with the presence of nitrates and/or nitrites indicates that the water source has been contaminated by runoff containing fertilizers or animal wastes. Nitrates are soluble and can move with surface runoff or leach into the groundwater by percolation through the soil. Nitrate is nontoxic; however, after ingestion, microorganisms in the digestive tract convert nitrate to nitrite, which is toxic. Once nitrite reaches the bloodstream, it binds strongly with hemoglobin and reduces the oxygen-carrying capacity of the blood.

**Iron**

Birds may be tolerant of the metallic taste of water with high iron levels, but high iron may cause leaking water nipples and can promote the growth of *E. coli* and *pseudomonas*. Iron in the ferrous form, when exposed to air, is converted to ferric hydroxide, which gives water the typical rusty color.

**Sodium and chloride (salt)**

Excessive levels of sodium have a diuretic effect and increase water consumption leading to wet litter. Levels above 50 mg/L (50 ppm), together with high levels of sulfate or chloride, can adversely affect flock performance. Excessive levels of chloride have been shown to adversely affect metabolism and increase water intake resulting in wet litter. A balanced feed ration contains all the sodium and chloride need by the bird. Any additional sodium and chloride in the water supply can adversely affect performance and litter quality.

### Water treatment options

With greater attention on removal of antibiotics from commercial poultry production, supplement use has increased as integrators and growers look to solve health and management issues in other ways. As a contract grower, do not run any additive/supplement on your flock without clearing it first with your service technician or live production personnel. For any supplement/additive to be successful, the water system must first be clean and the water supply safe. Understand any products that you plan to use: What are they? Why are they being used? What are the potential side effects to the birds and the water system? Are they really needed?

Water treatment options are available for water supplies that need help. The two most common water treatment options are chlorine and hydrogen peroxide. Understanding the various forms of chlorine available is important:

- Liquid chlorine: Often misused because of the pH with the water supply. If pH of the water supply is too low (< 6.0), chlorine will escape as a gas, decreasing effectiveness and increasing equipment corrosion. If pH is too high (> 8.5), the amount of hypochlorous acid formed will be greatly reduced, and the water will not receive adequate disinfection.
- Chlorine dioxide: More effective than liquid chlorine but requires mixing time and special handling.
- Gas chlorine: Most effective of all the chlorine options, but chlorine gas is dangerous and requires special knowledge and handling procedures.

If liquid chlorine is used, be aware that it can damage the rubber components of the drinker system, especially the rubber seals on nipple drinkers. Try to maintain a chlorine level of near 3 ppm at the end of the drinker line farthest from the control room. In addition, bacteria can build a resistance to chlorine over time. If you notice that chlorine is no longer doing as good a job as it did previously, switch to an alternative product (i.e., hydrogen peroxide) for a couple of flocks to address the issue.

Hydrogen peroxide products are available in varying percentage strengths, ranging from 20 to 50 percent. Visit with your service technician to find out what your integrator recommends. Some products have additives that significantly enhance the stability of hydrogen peroxide. In most cases, generic, technical-grade and most food-grade hydrogen peroxides do not contain these added ingredients and may not be as effective. The enhanced stability hydrogen peroxides may only be available through poultry supply warehouses or their catalogs.

**Summary**

NAE production programs have taught us that we must be proactive with water treatment programs. A high price will be paid if flocks are provided with anything less than a clean, safe, high-quality drinking water supply. Consider the fact that any program capable of providing a clean, safe water supply is actually two programs:

1. A specific program for thoroughly cleaning water lines when the houses are empty.
2. A specific program for daily treatment of water when birds are on the farm.

A water sample analysis is a must for growing birds in any NAE program. Growers must know what is in the water their chickens are drinking if they expect to help their birds perform at their best. Ask yourself this question: “Will I drink the water that my chickens are drinking?” If your answer is no, then you’ve got some work to do. □

# New Farmer's Guide to the Commercial Broiler Industry: Building a New Farm

*October 26, 2022 in Farming by Dennis Brothers*

Growers should consider and investigate many factors in the broiler industry before building a commercial poultry farm—type of farm, revenues and expenses, required capital, insurance, startup costs, farm loans, and even lifestyle. Learn more in this fourth of a five-part series for new farmers in the commercial broiler industry.

**Estimating Expenses & Net Income of a New Poultry Farm**

A commercial poultry farm's operating expenses across farm types are often estimated at 30 to 35 percent of gross revenue. A farm loan payment accounting for another half of the revenue leaves only 15 to 20 percent of revenue as net farm income. Often the only way to increase this return is by directly reducing variable inputs such as fuel or electricity.

The good news is that housing technologies and building techniques in the last decade have lowered the operational expenses of newer farms closer to 25 percent of gross revenue and have proven to retain these efficiencies longer.

Many growers are now building larger, more efficient houses with more houses per farm to capture greater economies of scale and the best returns. The downside to this trend is that the increased capital, labor, and management needed to build and operate these large farms can be limiting.

The typical poultry farm loan has a 15-year term. However, twenty-year loans are becoming more prevalent as growers look to improve cash flow and sustain net revenue. This can cause a less-than- desirable equity position during the later years of the loan, making it more challenging to secure refinancing for the maintenance and equipment replacement often required to support ongoing operations.

**Financial Analysis**

Integrators typically have business cash flow estimates pertaining to the three live production sectors. These pro forma documents should be based on the production expectations of the local complex and reflect a reasonable estimate of expenses for the area.

These numbers are almost always restricted to each sector's average income and costs over time. Both income and costs can vary outside of these average numbers, sometimes significantly, causing short- term strains in cash flow that can turn into long-term problems.

A proper financial analysis of the business should include the impacts of short-term income restrictions, cost escalations, or both. These can be grower and integrator related. Scenarios include disease-caused flock interruptions, market changes causing extended out times, or weather-related disruptions.

As a potential grower, you need to know how these can affect your cash flow, how well the business can financially handle such disruptions, and for how long. Discuss these and similar scenarios with a lender with poultry loan experience to better understand ways to prepare for such inevitable occurrences. Discuss with the integrator possible variances in pay based on performance. For more financial information, see New Farmer's Guide to the Commercial Broiler Industry: Purchasing an Existing Farm, ANR-2940.

**Lifestyle Considerations**

Since commercial poultry operations require a significant amount of labor and daily management, the business's long-term success is closely related to a grower's and family's satisfaction with the farm's lifestyle. This is somewhat difficult to predict until you are in the business.

Talk to as many growers of various-sized farms as possible to better understand what daily life will be like on the farm. Talk to growers with similar housing and birds to those you are considering, especially growers working for the same integrator as you will be, to get a cross-sectional view of the business. A good understanding of a poultry farm's potential ups and downs is important before entering this business.

If you have little to no knowledge of the poultry business, contact a grower and ask permission to visit a farm. Even better, ask if you can spend time working with a grower, performing daily tasks, to gain a firm understanding of what is needed to be successful.

Most integrators require contract growers or their hired managers to live on the farm property or within a defined distance from the farm. The cost of accommodations on the farm should be calculated into the overall business plan. One question to ask an existing grower is, What is it like to live on the farm?

Consider future quality-of-life costs and decide if the projected farm income can support expectations in this area. Long-term success also requires a certain amount of financial discipline. You must ask your family and yourself if these requirements can be met. Living outside the lifestyle the farm supplies is often a cause of failure by a poultry farm business.

The contract poultry farm is considered to have an overall lower risk from market changes compared to many other farming businesses, but it does not come with zero risk. Understanding what risks exist can help you make better business decisions. As with any business, lower risk often comes with lower potential returns on investment.

**Next Steps**

Moving from a general overview into taking steps to pursue a business should include the guidance of a local broiler company

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Contact the local poultry company's live production office to inquire if there are any opportunities for new growers in the desired farm type. There may be an immediate need for additional housing or a waiting list of potential future growers.

It can be argued that this is the first step to take. If local companies do not currently have room for more growers, there is no opportunity to explore building a new farm. Either way, the company can offer direction and will have other questions and requirements to consider.

**Location Considerations**

The first aspect of starting a new poultry farm is to examine the physical location. The new farm must be inside the zone of operations for the local broiler complex. Usually, this is a locally determined radius from the complex feed mill or main operations center. If a prospective location falls within these limits, the next question is more complicated: Is the land suitable for the desired farm type and size?

Federal, state, and local governments have regulations that can affect the physical location of animal feeding operations. Regulations can vary widely with state and local governments. These can include zoning laws that prohibit new housing in some areas or restrict the type and overall size of the operation.

If there are no overarching restrictions to a farm's existence on the property, there will be state regulations for the facility's proximity to property lines, other public facilities, neighboring residences, riparian water sources, wells, etc. The projected facilities must fit within these guidelines. There also will be regulations on waste removal, storage, and handling that could impact whether a piece of land is suitable for a new facility.

Contact the offices of the local Farm Services Agency and Natural Resource Conservation Service (NRCS) for answers to these questions. Sometimes the company's live production office will have some of this information already prepared. The local NRCS office will eventually form the farm's waste management plan. The integrator will likely take soil samples to check for the presence of pesticides or contaminants that could pose a threat to food safety.

The prospective property will need access to utility services and sufficient water sources, either wells or municipal water, or both. New farms often require two water sources or multiple wells, and the water quality must meet husbandry standards. The integrator dictates the minimum requirements for each according to farm size. All costs of supplying utilities fall upon the grower. More remote properties may incur higher than normal utility access costs.

When considering the placement of a new farm facility, it is wise to consider the good-neighbor policy. Sometimes a proposed facility meets all the regulatory requirements of the state and local government, but other factors could prove problematic in the future.

Talk to potential neighbors about your proposal to learn how they feel about the new farm. It may be beneficial to orient the facility to minimize potential nuisances, even if it costs a little more. In these cases, the long-term benefit for the farmer and the industry far outweighs the increased cost.

At the extreme, some properties are just not suited for a new facility based on this good-neighbor policy alone. For instance, if a potential farm is to be built next to a piece of land recently sold to a land developer with plans to build a residential subdivision, the potential for future conflict could render the property unsuitable for a new farm.

**Poultry Housing Specifications**

Every new poultry house should be constructed to meet a professionally engineered design […]. The design should be specific for the farm location, considering local weather and soil conditions, stamped and signed by an engineer accredited in the state.

The local poultry company office has housing specifications for every type of new live production facility in their complex. These should be part of a package of documents received from the live production office. These specifications may include guidance on location requirements that go beyond local governmental requirements. They will have guidance on what type and size houses are to be built and equipment requirements.

Structural specifications should include professionally engineered design drawings for the structures specific to the general area, considering local soil types and weather patterns. Once the housing number and size are decided, a general layout of a farm in total, including all outbuildings and access roads should be produced. This layout will aid you in placing the farm on the chosen property to meet all required property line setbacks and restrictions.

Housing specifications can be highly detailed or more general, but they should be sufficiently detailed to take to a poultry builder for bidding a new facility. The grower's responsibility is to ensure that the builder bids and delivers a facility that meets the company's requirements. Therefore, the more detailed the specifications, or the closer the guidance of the company, the better the quality of build to be expected.

**Additional Capital Considerations**

Every poultry operation requires rolling equipment to operate. Tractors, trailers, litter-handling equipment, and the like, are all expenses associated with starting a farm. These capital needs must be considered whether they are added as new assets or shared with another enterprise on the farm. *continued on next page*

# New Farmer's Guide to the Commercial Broiler Industry: Building a New Farm

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Additional outbuildings also must be considered. Litter sheds and mortality handling facilities are important parts of the operation that must be part of the business plan. Contact the local NRCS office for cost-share opportunities in waste management structures and equipment and for mortality disposal facilities.

**Insurance**

Insurance coverage is critical for any poultry farming operation and is required before a lender finalizes a loan. Insurance coverage for commercial poultry farms is becoming difficult to secure in some areas, and the cost can be prohibitive. It is advisable to contact potential insurance carriers early in the purchasing process.

A builder's risk policy is typically required to be in place during the construction phase. Insurance companies often want to inspect the facility as it is being constructed and may have specific structural or equipment requirements beyond basic housing specifications.

Additional types of coverages should be discussed, such as loss of income or business interruption coverage, equipment mechanical failure coverage, and replacement cost value versus depreciated cash value- only coverage for property damages.

Of these coverages, loss of income or business interruption coverage must be carefully evaluated. Most policies will replace all or most income lost directly to a covered peril. For instance, if a fire destroys a house, insurance typically covers a portion of the income that would have come from the lost flock of birds. However, policy limits may prevent payment for all the income lost during the reconstruction phase. It is recommended that a policy have loss of income coverage with limits equal to or exceeding 6 months of normal net revenue to allow for farm repair while not imposing financial hardship.

**Start-Up Costs**

Every new farm will have start-up costs, and every existing farm will have new flock set-up costs. Having working capital available to cover such things as this semi-truckload of new shavings for litter is important for both new growers and established farms.

Every new farm will have additional start-up costs. These can include recurring flock inputs, such as litter, chick feed trays, diesel fuel for generators and rolling equipment, litter ammonia treatments, litter beetle pesticide, and sanitation products. In addition, the farmer must account for utility deposits and hookup fees, monthly utility bills due before flock payment, and weekly labor expenses.

The start a business, the capital to cover these expenses must be at hand. Too often, new growers are unprepared for these expenses and quickly find themselves deep in credit card debt or encumbered with other high-interest, short-term loans. Having substantial working cash on hand is always the best option. However, adding a percentage of these expenses into the farm loan upfront can be a viable option that will cost less than using unsecured debt as a capital source.

The amount of working capital needed varies with farm type and size. Location and season also can impact immediate working capital needs in the form of heating fuel or electricity requirements. If these bills come due before a flock settlement takes place, working capital must be at hand to cover them.

It is a good practice to budget ahead for flock expenses that will be due before flock payments arrive and to continue the practice even after the farm begins receiving flock payments. For broiler farms in general, one quarter (25 percent) of a farm's annual variable expenses should be available for working capital. With pullet and breeder farms, which are paid biweekly or weekly, working capital needs are lower but still must be considered. Once a farm is up and running and revenue is coming in, proper budgeting should include establishing sufficient working capital to carry the farm through for several months.

**Business Entity Choice and Financing**

A commercial poultry farm is a large agribusiness entity. Careful consideration is needed as to the kind of business entity chosen, as it has direct impact on income taxes, business liability issues, and future farm succession. The business structure chosen, whether a limited liability company, a sole proprietorship, or other, can have a significant impact on how the business fits into the household income-tax structure.

One of the first steps to take in moving forward on a new farm build is to contact a competent accountant and attorney skilled in a new business setup. It is especially helpful if they have experience with agricultural businesses.

Building a new poultry facility is expensive and proper financing is imperative. The best place to start a loan discussion is with a specialized agriculture lender. Agriculture lenders understand the business model and can guide you through the processes. They are often local, giving them knowledge of the poultry business in the area. Agriculture lenders are usually skilled in navigating government farm loan guarantees or subsidies and integrating multiple farm enterprises into a financial loan package.

Consider talking to more than one lender to compare products and procedures to find one that best fits your goals. □

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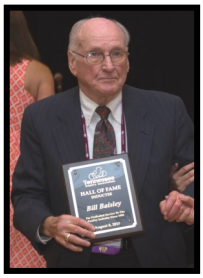
## Obituaries



**William C. (Bill) Baisley**, 90, of Dayton, Tenn., passed away on Aug. 28, 2022. He was born in Crossville on April 13, 1932, the son of Carson and Weltha Wyatt Baisley.

Mr. Baisley served for 38 years as a national domestic sales manager with Peterson Farms. He received a bachelor's degree in agricultural science from Tennessee Technological University and began work in the poultry industry in 1959 as a salesman for Dixie Grain Co.

Mr. Baisley worked for several poultry companies in Tennessee and Alabama before moving to North Georgia in 1967 and beginning his work with Peterson Farms. He rose through the ranks of the company and was eventually the vice president of the southeast district for Peterson Farms.

Mr. Baisley was also very active with several poultry industry and agricultural associations. He served as chairman of the Georgia Poultry Federation in 1983 and 1984; and was chairman of the Georgia Poultry Improvement Association in 1996 and 1997. He had served on the board of the National Broiler Council and was very active on the board of the Georgia Agribusiness Council.

In 2015, Bill was inducted into the TN Poultry Association's Hall of Fame, and in 2017 he was inducted into the University of Georgia's Georgia Agricultural Hall of Fame.

Mr. Baisley also worked diligently on educational efforts for children with disabilities, as well as employment for adults. He was instrumental in founding the John W. Looper Speech and Hearing Center in Dalton, Ga., which focuses on special education and medical care. He also worked to begin a program with Peterson Farms designed to encourage the hiring of people with disabilities, as a result the company won the Tommy Nobis Award in 1999 in recognition of this initiative.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