TPA NEWSLETTER

from the Tennessee Poultry Association

Tennessee Poultry Association

Summer 2019

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717-278-8041

Poultry is set to become world's most consumed protein

April 26, 2019 by Jake Davies in PoultryWorld.net

Poultry is set to become the world's most consumed meat protein in 2019 as African swine fever spreads in pig herds across China.

Delegates at the recent International Poultry Council (IPC) meeting heard how total world production of pork will decline in 2019 with poultry in position to wrest the crown from pork as the world's most consumed meat protein.

The upheaval in meat proteins is being driven by African swine fever (ASF) in pig herds in 3 continents and 15 countries. Production losses in 2019 are expected to amount to 14% of the world's pork supply but may continue to move higher.

"Hog losses in China due to ASF will trigger big shocks in global protein markets," Christine McCracken, senior protein analyst at Rabobank, told IPC members, "and poultry is the meat protein with the most to win." *continued on page 2*

Water is now Ag exempt for sales & use tax in TN!

Gov. Bill Lee recently signed legislation to provide for Ag Exemption on sales & use tax for metered utility water in TN, effective July 1, 2019. Growers will need to then file for and request this exemption with their local utility company, *for each eligible meter*. Only meters designated 100% for recognized agriculture purposes will be eligible for Ag Exemption. UT Extension estimates an annual savings of about $1740 to be realized for an average four house broiler farm (with 500' houses and cool cells) that is relying primarily on metered water. Thanks goes to Rep. Charles Halford and Sen. Paul Bailey for sponsoring this legislation, to the TN Farm Bureau Federation for getting this presented to the Governor for his full support and to TPA Executive Director, Dale Barnett, for championing this exemption. This is TPA and our allies working for you - please join today if you are not already a grower member! □

TPA Annual Meeting & Summer Getaway set for Aug. 2-3

Information for the upcoming annual meeting and summer getaway is on page 2, and the related registration materials can be found at the very back of this newsletter on **pages 56-58**. We hope to be seeing everyone for another great year in Nashville filled with exciting events, speakers and entertainment! Anyone wishing to discuss sponsorships or donate auction items please contact Tracy at (270) 363-2078 or tracy@tnpoultry.org. □

INSIDE THIS ISSUE

Poultry is set to become world's most consumed protein *(continued from previous page)*

ASF outbreaks are ravaging pork production mostly in the Eastern Hemisphere, but the biggest impact is in China where nearly one-half of the world's pigs are raised. Herds there are being hard hit by a disease that results in 100 percent mortality of infected stock and for which no vaccine exists.

The disease, which has been in Russia and Eastern Europe for several years, was found in China in August 2018 and is spreading to Southeast Asia and Vietnam (the world's fifth largest producer of pork). A small outbreak in the European Union has threatened exports there.

"China produces 98% of its pork, so a forecasted 30% decline in supplies there by year's end will lead to a decline in total world protein supplies in 2019," McCracken said.

The world will be unable to fill the supply gap in meat proteins, according to McCracken. "Expect imports of all proteins (beef, poultry and seafood) to have limited near-term impact. Prices for all proteins will rise," she said.

ASF losses will leave China 10% short of meat proteins, but China may be able to increase domestic production of other proteins like eggs, beef, seafood and poultry. "Poultry imports might benefit the most," she said.

[Note from TPA: *Christine McCracken with Rabobank will be the keynote speaker at the TPA Annual Meeting this Aug. 2nd in Nashville.*] □

Tennessee Poultry Association

ANNUAL MEETING & SUMMER GETAWAY

2019

AUGUST 2 - 3

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- For more information, contact Tracy Rafferty at tracy@tnpoultry.org or (270) 363-2078
- Register online by *July 1* at http://tnpoultry.org/meeting/registrationForm.cfm
- Special group hotel rates available until *7 pm CT July 2* at https://doubletree.hilton.com/en/dt/groups/personalized/B/BNADUDT-TPL-20190731/index.jhtml?WT.mc_id=POG or by calling (800) 222-8733 using group code TPL


Speakers


Silent Auction


Sporting Clays


Golf


Grand Ole Opry Tour


Awards Banquet & Live Auction

More information and the registration form can be found on page 56-58 of this newsletter.

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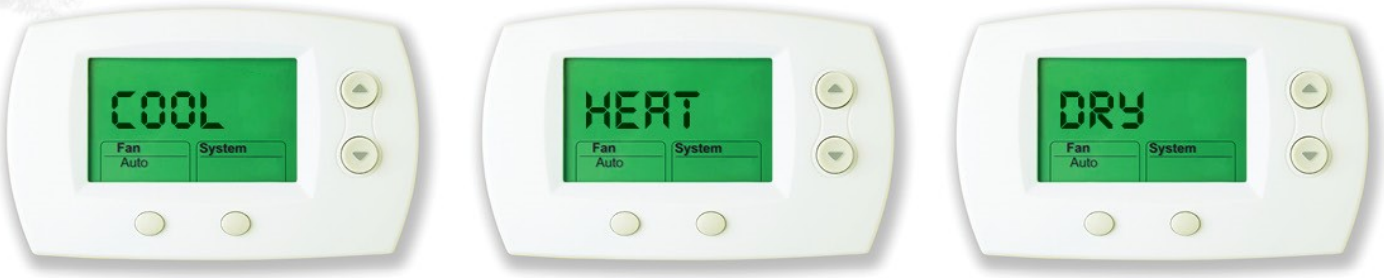

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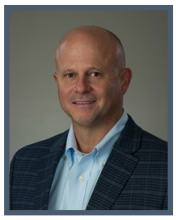
ALLIED MEMBER NEWS



Jones-Hamilton Co. announces the promotion of **Blake Gibson** to the role of Global Sales Manager for the Agricultural Division. Gibson joined the company in 1994 as the Agricultural division's founding employee, where he worked to introduce to the poultry industry to PLT® - Poultry Litter Treatment one farm at a time.

BioSafe Systems announces *BioSafe Continuous Dosing System™,* a single chemical pre-dilution tank that provides ultra-lean dilutions and eliminates hand mixing stock solutions. Available in three models, this system keeps livestock water lines clear of scale, mineral build-up, harmful bacteria, algae, and heavy soils. BioSafe Systems also announces *BioBuster™*, an integrated control and monitoring system used to manage a variety of PAA applications within the processing plant. This system is designed to control pumps, equipment, and dosing with a variety of control meters, probes, and valves. Finally, BioSafe Systems announces new technology for monitoring PAA concentrations in water used for poultry processing chiller applications. *BioChamber™* is designed to monitor peroxyacetic acid and caustic ppm levels at multiple intervention hurdle steps including chillers, dips and spray cabinets, and communicate with the pump controller to maintain desired levels of intervention chemistries.

BioSafe Systems is pleased to announce the hire of **Justin Anderson** as Technical Sales Representative for their Meat, Poultry, and Seafood (MPS) sales team. Justin will be working within the poultry and egg industry across the Southeast region of the US. Justin earned a bachelor's degree in Social Sciences and prior to joining BioSafe Systems he was employed with Wayne Farms, holding several different roles which gives him invaluable work experience.

NEWS FROM AROUND THE COMPLEXES

Joshua Morris has been the new complex manager for the **Cobb-Vantress, Inc**. Dry Creek pedigree farm since this past December. Joshua was formerly the assistant manager at Dry Creek during 2018 and he worked at Cobb's pedigree farm in Oklahoma before then. **Dusty Cagle** is the assistant manager for Dry Creek and he was previously in Georgia working with GGPs for Cobb. Former complex manager **Craig Benich**, who was with Cobb for 17 years, is now working for **Boehringer-Ingelheim** and will be based out of Texarkana.

Brad Moody is now the Breeder Manager for **Koch Foods Morristown.** Brad has worked with Koch for over 13 years. He has serviced breeders, broilers and pullets and most recently was the broiler manager for Koch's Chattanooga complex for the past 5 years. He has a BS in Ag Business from LSU with a minor in Poultry Science.

Jeremy Martin was recently named the new **Aviagen®** US Sales Manager. In this new role, he will manage the US sales team. Martin has been with Aviagen for more than two decades. Since 2011, he has supported the sales and service team and led the quality program group as Director of Quality Assurance. He entered his career as Poultry Specialist for Aviagen in Elkmont, Ala. Through a series of promotions, he held several diverse positions in both grandparent (GP) and pedigree operations: GP Breeder Manager, Director of Great Grandparent Operations and Director of Quality Assurance. He holds a Bachelor of Science degree in Poultry Science from Auburn University.

Dr. Jessica Hockaday has been named the new Director of Quality Assurance for **Aviagen® North America**. As Director of Quality Assurance, Jessica oversees all areas of quality control, from GP farms to customer deliveries, in addition to working with sales and service teams to ensure that North American customers are satisfied with healthy, high -quality parent stock. Dr. Hockaday holds a Doctorate of Veterinary Medicine from California's Western University of Health Sciences, a Master of Science in Veterinary Medicine from Mississippi State University and a Bachelor of Science in Animal Science from California Polytechnic State University.

DATES TO REMEMBER

USPOULTRY HATCHERY BREEDER CLINIC
July 9-10 , 2019
Sheraton Nashville Downtown

TPA ANNUAL MEETING & SUMMER GETAWAY
August 2-3, 2019
DoubleTree Nashville Downtown

SAFE + SOUND WEEK
August 12 - 18, 2019
See page 27 for details
https://www.osha.gov/safeandsoundweek/

USPOULTRY LIVE PRODUCTION SEMINAR
Sept. 17-18, 2019
Sheraton Nashville Downtown

USPOULTRY WOMEN'S LEADERSHIP CONFERENCE
Aug. 15-16, 2019
Hilton Sandestin

Jayson Penn to succeed Lovette as Pilgrim's Pride CEO

MARCH 22, 2019 IN WATTAGNET.COM

Penn has most recently served as president of Pilgrim's USA

Pilgrim's Pride Corporation has appointed Jayson Penn, currently president of Pilgrim's USA, to succeed Bill Lovette, who is retiring from the position of president and chief executive officer of Pilgrim's Pride.

About Jayson Penn

Penn, an accomplished executive with more than 30 years of experience, grew up in the poultry industry, beginning in his family's poultry company. He joined Pilgrim's in March 2011 and has served as senior vice president of the Commercial Business Group, executive vice president of sales and operations and, most recently, as president of Pilgrim's USA. Prior to Pilgrim's, Penn served in management positions at several leading poultry companies.

He has also served on the board of directors and the executive committee of the USA Poultry and Egg Export Council and currently serves on the board and executive committee of the National Chicken Council and the board of directors of The World Poultry Foundation. He is a graduate of Florida State University and the Advanced Management Program at the Harvard Business School.

"Jayson Penn has enjoyed a distinguished career in the poultry industry and has played an integral role in the success of Pilgrim's over the last eight years," said Gilberto Tomazoni, chairman of the Pilgrim's Board of Directors. "Since joining the company in March 2011, Jayson has exemplified the leadership qualities, passion to succeed and business acumen that make him the ideal candidate to assume this role. The board's decision is further validation of the Pilgrim's strategy, implemented in 2012, to create a unique, diversified portfolio across multiple geographies, with a focus on key customers and operational excellence, to generate more consistent and higher margins. Jayson has been at the forefront of this strategy and we are confident in his ability to continue to create shareholder value.

Penn will assume the position of president and CEO immediately.

"I am humbled that the board has given me the opportunity to serve as Pilgrim's CEO," Penn said. "Pilgrim's has been on a remarkable journey of growth, building a strong culture of empowerment and providing our customers and consumers with high quality, innovative solutions that allow them to thrive. We are a global team of more than 52,000, unified in mission and purpose, and I am excited to help guide our team in the next steps of our journey.

"I am extremely grateful to Bill for his mentorship, counsel and friendship," Penn added. "Working alongside Bill for these last eight years at Pilgrim's has been the highlight of my career and his constant support, leadership by example and strong work ethic have made this seamless transition possible."

Bill Lovette's tenure

Lovette was appointed president and CEO in January 2011 and, during his tenure, led a period of unprecedented value creation for the company and its shareholders, growing the business from $6.9 billion to $10.9 billion in annual net revenue. Over the last eight years, Lovette helped establish Pilgrim's as a leading global food company by building a diversified portfolio of brands and on-trend products, extending the company's footprint to the U.K. and Europe, significantly expanding its presence in Mexico, investing in operations and increasing margins and bottom-line profitability by partnering with key customers to create shared success.

"The board is extremely grateful for Bill's leadership, vision, dedication and commitment," Tomazoni said. "His legacy at Pilgrim's will endure through the strong management team and unique business platform he developed, which will position the company for continued growth and success."

Lovette will remain available to provide strategic advisory services to the company through July 2020.

"I appreciate the commitment and support from our team throughout this eight-year transformational journey to create the company Pilgrim's is today," said Lovette. "Jayson has been instrumental in building our strong culture and we back him with our full support." ◻

May 22, 2019 – HUNTSVILLE, Ala. – "Everything old is new again." That phrase by American author Stephen King captures the sentiment behind Aviagen's reviving of a decommissioned hatchery in Albertville, a rural community in northeast Alabama, US. Aviagen has transformed the historic hatchery into the new Research and Training Center. In a ceremony on May 22, Aviagen CEO hosted the grand opening of the newly refurbished center. ◻

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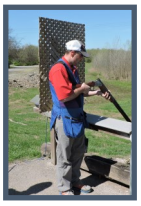
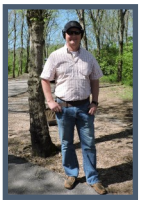
THANKS SO MUCH TO ALL WHO SUPPORTED OUR SCHOLARSHIP FUNDRAISERS!!!

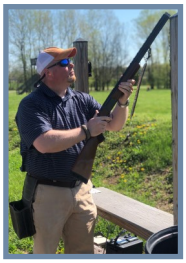



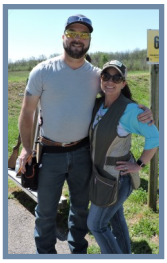

Sporting Clays Shoot Winners

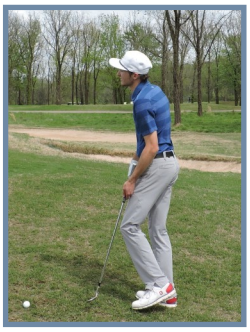
1st Place - Mark Turner, TN Farm Bureau
2nd Place - Shane Joyner, Tyson Obion
3rd Place - Brett Garrison, Cobb-Vantress

Golf Tournament Winners

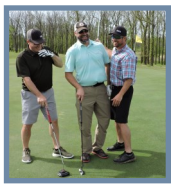
Micah Abernathy , Tyson Shelbyville
Preston Driver, International Paper
Russ Bratton, International Paper
Hayden Blair, Tullahoma High School
Also pictured: Andrew Blair, Tyson Shelbyville










Should Vegetarian Products Be Allowed Meat-Related Names?

By **Jennifer Shike** in Drovers.com on **March 13, 2019 08:34 AM**

One in four consumers believes vegetarian products should not be allowed to have meat-related names like sausage or burger, a survey has found.

Polling experts Surveygoo explored attitudes about the naming of meat-free products. Nearly 1,000 consumers were surveyed from the UK and the U.S., including vegetarians, vegans, pescatarians [they eat fish but no other meat] and meat-eaters.

Across all groups, 25% of respondents said manufacturers of vegetarian products should not be permitted to use meat-related names like sausage, burger or steak, according to a release by Ingredient Communications.

Vegetarians were the least likely to disapprove of meat-related names, with only 18% supporting a ban. By contrast, 33% of vegans and 26% of meat-eaters said vegetarian products should not be allowed to have meat-related names.

"It's no secret that many in the meat industry want to stop what they see as the misrepresentation of vegetarian products," says Richard Clarke, Managing Director of Ingredient Communications. "What is perhaps surprising is that so many consumers also seem to support a ban. With interest in plant-based diets increasing, and a backlash from the meat industry under way, it is time for a debate about the way vegetarian and vegan products are presented."

There's a significant divide between vegetarians and vegans when it came to purchasing decisions, according to the survey. Nearly half of the vegetarians surveyed (49%) said they were more likely to buy a meat-free product if it was labeled with a word such as sausage, burger or steak. However, only 19% of vegans said the same, with 57% saying they were less likely to buy a product if it carried a meat-related name.

"Vegetarians seem to prefer products that mimic traditional meat formats, but this is a turn-off for many vegans," says Neil Cary, managing director of Surveygoo.

This is an important lesson for manufacturers and marketers of plant-based products – vegetarians and vegans are distinct consumer categories, with vastly different purchasing preferences, Cary adds.

The presentation of meat-free products is a political issue in both Europe and the US. In 2017, the European Court of Justice prohibited dairy product names for non-dairy products, such as milk. Last year, France passed legislation prohibiting vegetarian products from being labeled in the same way as traditional animal products. In Missouri, "misrepresenting a product as meat" if it did not derive from livestock or poultry is prohibited.

So, what did survey respondents think we should call vegetarian products if meat-related names are banned? The top name for sausages was "rolls," the top name for burgers was "patties," and the most popular name for vegetarian steaks was "portions." ◻

Higher Limits Now Available on USDA Farm Loans

May 2019 in the **Tennessee FSA Newsletter**

Higher limits are now available for borrowers interested in USDA's farm loans, which help agricultural producers purchase farms or cover operating expenses. The 2018 Farm Bill increased the amount that producers can borrow through direct and guaranteed loans available through USDA's Farm Service Agency (FSA) and made changes to other loans, such as microloans and emergency loans.

Key changes include:
The Direct Operating Loan limit increased from $300,000 to $400,000, and the Guaranteed Operating Loan limit increased from $1.429 million to $1.75 million. Operating loans help producers pay for normal operating expenses, including machinery and equipment, seed, livestock feed, and more.

The Direct Farm Ownership Loan limit increased from $300,000 to $600,000, and the Guaranteed Farm Ownership Loan limit increased from $1.429 million to $1.75 million. Farm ownership loans help producers become owner-operators of family farms as well as improve and expand current operations.

Producers can now receive both a $50,000 Farm Ownership Microloan and a $50,000 Operating Microloan. Previously, microloans were limited to a combined $50,000. Microloans provide flexible access to credit for small, beginning, niche, and non-traditional farm operations.

Producers who previously received debt forgiveness as part of an approved FSA restructuring plan are now eligible to apply for emergency loans. Previously, these producers were ineligible.

Beginning and socially disadvantaged producers can now receive up to a 95 percent guarantee against the loss of principal and interest on a loan, up from 90 percent.

About Farm Loans
Direct farm loans, which include microloans and emergency loans, are financed and serviced by FSA, while guaranteed farm loans are financed and serviced by commercial lenders. For guaranteed loans, FSA provides a guarantee against possible financial loss of principal and interest.

For more information on FSA farm loans, visit www.fsa.usda.gov or contact your local USDA service center. □

Mexico, Vietnam report new avian flu outbreaks

MAY 23, 2019 in WattAgnet.com BY JACKIE LINDEN

Mexico has had 11 cases since March

Further cases of highly pathogenic avian influenza (HPAI) have been reported in poultry in Mexico and Vietnam, and an unusual avian flu virus type has been detected on farms in Belgium.

There were five outbreaks linked to the H7N3 virus variant in Mexico between April 24 and May 7, according to the latest report from the country's animal health agency, Senasica, to the World Organization for Animal Health (OIE).

Affected were four small backyard flocks in the states of Queretaro, Guerrero, and Tlaxcala, and a farm with 2,000 laying hens in Queretaro. Surveillance identified one of the backyard flocks before there were signs of the disease, but there were mortalities, and symptoms of cyanosis and edema in the combs and wattles of poultry at the other locations. Of the 2,107 birds involved in these outbreaks, 1,266 died and 41 have been culled to control the further spread of the virus.

These outbreaks bring Mexico's total outbreaks reported since March to 11, affecting more than 144,000 poultry in seven states/regions. Among these were birds at two premises described as "farms."

New outbreak in Vietnam

HPAI caused by the H5N1 virus variant has returned to Vietnam after an absence of less than two months. Starting in the first week of May, the latest outbreak was among a flock of 1,120 village birds in the province of Hau Giang, which is in the southern region of the Mekong River Delta. All the birds have been destroyed.

Disease cases resolved in Vietnam, Russia

Following just one outbreak of HPAI caused by an H5N6 virus in a central province earlier this year, Vietnam's agriculture ministry has declared that disease situation "resolved" to the OIE.

Russia's agriculture ministry has informed OIE that a series of HPAI outbreaks has also ended. The H5N8 subtype had been detected at a number of locations since June of last year, but no cases have been reported since an outbreak at a large turkey farm in Rostov last in January.

Avian flu situation in Belgium

Over the past few weeks, an avian influenza virus has been detected at 35 poultry farms in Belgium, according to the provincial department of agriculture. Most of the farms are in West Flanders, the country's most western province bordering the North Sea.

Symptoms have ranged from a drop in production to mortality, so affected birds have been culled, and farmers will receive financial compensation.

The virus detected is an H3 type, which is "harmless to human health," and it is not a notifiable disease, according to the department.

Influenza awareness campaigns in Nepal

Following the death of the first human victim of avian influenza A (H5N1) in Nepal in March, the authorities are to launch an awareness campaign for local people, reports The Himalayan Times.

"We'll tell people there's no risk of being infected if well-cooked chicken is consumed," said the head of the health center for Kavre district. "We will also tell them how to process and cook chicken to make sure that the meat is safe."

The center's team has already visited many of the 350 poultry farms in the district, spraying disinfectant, and providing information on how they can stay safe from the disease. □

Advantages and Disadvantages of Coccidiosis Control Programs in Poultry

Coccidiosis is a protozoan economic disease of poultry, in which around 80 percent of losses are due to mortality, reduced weight gain, inefficient feed conversion, associated with loss of egg production in layers. The pathogenicity of Eimeria spp. organisms, in various poultry breeds, is documented. Control programs of this economic disease included poultry house management, introduction of live vaccines (non-attenuated and attenuated), development of subunit, recombinant, DNA-based vaccines and supplementation of feed by prophylactic coccidiostatic drugs.

Click here for full article □

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6 articles you need to read about ASF (African Swine Fever)

May 29 2019 in WattAgNet.com by TARA LOSZACH

Learn more about how the current African swine fever outbreak is impacting grain and swine markets, what it means for poultry producers and efforts to develop an ASF vaccine.

Click here to read □

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AVINEW® is the only live attenuated Newcastle disease vaccine that replicates in both the respiratory and enteric tracts[1] to provide a strong systemic immune response with minimal reactions.[2]

REFERENCES
1 Perozo, F. et al (2008). Avian Pathology, 37:3, 237-245.
2 Data on file.

POU-0032-POUL1118

PREVENTION WORKS
Shaping the future of poultry health

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Virulent ND in California Sending Wake-Up Call to US Poultry Industry

Outbreaks of virulent Newcastle disease (vND) that have spread from backyard to commercial flocks in California are providing a wake-up call to the entire US poultry industry about the need for ND monitoring and adherence to strict biosecurity, Joseph Giambrone, PhD, a professor at Auburn University, told Poultry Health Today. *Click here for full article* □

Virulent ND outbreaks underscore need to rethink vaccination program

By Philip A. Stayer, DVM, MS, ACPV, Corporate Veterinarian for Sanderson Farms, Inc. in PoultryHealthToday.com

Since May 2018, USDA has confirmed more than 400 cases of virulent Newcastle disease (ND) in California.[1] The outbreak started in backyard chicken flocks, but as of this writing, the disease had reached at least three commercial layer operations.[2]

These cases of virulent ND are the first to occur in commercial poultry since 2003[3] and prompted California's state veterinarian to order mandatory euthanasia of flocks in several neighborhoods to stop the spread of the disease.[4]

The situation underscores the importance of making sure our ND vaccination programs are up-to-date. It also brings to mind the difficulties that can be encountered — even when we're not dealing with the highly fatal, virulent form of ND.

Triggered by IB

Fortunately, most commercial US flocks affected by ND still have the lentogenic or minimally virulent type. In fact, most respiratory diseases in commercial US broilers are triggered by infectious bronchitis (IB) virus and ND is considered rare. Some lentogenic ND virus, however, still persists.

I recall hearing observations made by another poultry production veterinarian who found that when he altered his vaccination program to address IB and minimized ND protection, the ND virus challenge increased.

Years ago, early in my career with broilers in south Mississippi, challenge with the Arkansas strain of the IB virus was a problem in unprotected flocks. My veterinary predecessors weren't permitted to use aggressive commercial IB Arkansas vaccines because they were sometimes associated with detrimental effects on livability in flocks previously unchallenged by this pathogen. However, once we proved that milder IB Arkansas vaccines could be used successfully in our area of the country, airsacculitis condemnations decreased in processed flocks, and vaccination against IB Arkansas became standard fare.

Sudden change one winter

Our Mississippi broiler flocks continued to have excellent respiratory health for years with minimal vaccination changes, but our good fortune changed one winter. We experienced increased field mortality due to airsacculitis, as well as an increase in condemnations at one of the processing plants. The Poultry Research and Diagnostic Laboratory (PRDL) in Pearl, Mississippi, continued to isolate vaccinal IB Arkansas. However, in-house serology showed low IB virus titers and increased ND virus titers. At the time we were using a very mild, modified-live ND vaccine — a full dose administered in the hatchery and another full dose of the same vaccine at 2 to 3 weeks of age.

To address the increased ND virus challenge, we switched to a more aggressive modified-live ND vaccine for the field boost, which produced the desired result of keeping flocks mostly free of clinical airsacculitis. ND virus titers in vaccinated flocks rose and were considered a measure of increased protection.

This new vaccine program worked for several years and would have continued, but then the recombinant herpesvirus of turkey vaccines with ND virus (rHVT-NDV) inserts became commercially available. After a few successful trials with those products, we replaced both hatchery and field ND vaccinations with the single-dose rHVT-NDV vaccine given *in ovo*. As expected with rHVT-NDV vaccines, broiler ND virus titers plummeted to almost undetectable levels.

One might speculate that prolonged vaccination with an effective modified-live ND vaccine displaced the field challenge so that rHVT-NDV vaccines faced a less intense ND virus challenge. Regardless of the mechanism, flock health continued to be excellent in south Mississippi on this minimalist ND vaccine program, even up to the writing of this article.

Since the rHVT-NDV vaccination program used in Mississippi was both protective and cost-effective, we adopted the same vaccination plan for our Texas broilers. As in Mississippi, the broilers in Texas continued to have very few airsacculitis issues. When they did occur, they were mostly due to some type of IB virus, which was identified by both serology and virus isolation.

Another hiccup

Over the years and to minimize costs at our Texas location, we switched to another company's rHVT-NDV vaccination, but the protocol remained the same — until one winter when broilers started dying in the field with complicated airsacculitis. Survivors had an increased prevalence of airsacculitis condemnations at processing.

A company veterinarian reviewed serology results and noticed both IB and ND virus titers were elevated, so the *in ovo* recombinant ND vaccine was removed and a modified-live ND vaccine at day-of-age was reintroduced. The more aggressive field vaccine we used before wasn't available at the time, so we had to use another one.

continued on next page

Virulent ND outbreaks underscore need to rethink vaccination program (*continued from previous page)*

It had the IB virus variants needed and a reportedly mild ND virus strain. The vaccine was primarily used in the egg-layer industry, and we soon found out that broilers react more intensely to these vaccines than egg layers.

With the success of the rHVT-NDV vaccine in Mississippi, we had confidence in its ability to protect against field strains of ND virus. However, after a few more attempts in Texas using various modified-live ND vaccines at day-of-age with a field boost, we ended up trying the mild hatchery ND vaccine again at day-of-age preceded by rHVT-NDV given *in ovo*. This combination of *in ovo* rHTVT-NDV and day-of-age modified-live NDV vaccination has proved to be effective for control of ND at our Texas location for the past 3 years.

Delayed immunity

Researchers have documented that immunity takes about 4 weeks with the rHVT-NDV vaccines.[5] ND virus antigen expression is directly linked to the slower replication of the host HVT Marek's virus. In other words, ND virus immunity takes longer with the recombinant vaccines compared to immunity from modified-live ND vaccines.

It appeared the Texas field ND virus challenge occurred between the decay of maternal antibodies and the onset of rHVT-NDV immunity. Day-of-age modified-live NDV vaccination, even with a very mild vaccine, appeared sufficient to fill the gaps in ND immunity.

These two experiences with ND disease demonstrate several truisms. First, each occurrence of a disease may not respond the same way with the same tools. Second, experience with various vaccines helps direct expectations but must be accompanied by an open mind to accept new realities. Third, some trusted tools may not always be available, so having multiple options for the same vaccine may be essential to future survival of commercial broiler-chicken production.

Of course, the situation with ND could change dramatically if the virulent form of the virus spreads further among commercial flocks. Unfortunately, we can't foresee the future, so we'll have to monitor and make changes if our flocks are affected. □

Fat Found to be 'Crucial' for Marek's Disease Infection

Apr 17, 2019 in Feedstuffs.com

Scientists at The Pirbright Institute in the U.K. have demonstrated that production and storage of fat is required for Marek's disease virus (MDV) replication in chickens.

The research identifies new pathways involved in the development of the disease that can help generate control strategies to reduce virus spread, the institute said in an announcement.

Marek's disease is a major threat to the poultry industry, with losses relating to the disease estimated to be up to $2 billion worldwide. The virus is highly contagious and causes a condition in which arteries are clogged with fatty substances called plaques, Pirbright explained.

The researchers, whose results were published in the *Journal of Virology*, identified chemical inhibitors that disrupted two different but connected fat production pathways that significantly reduced virus replication. Although these inhibitors helped the team identify the cellular mechanisms that the virus disrupts during its infection cycle, they would not be suitable for antiviral development due to their side effects and potential transfer to eggs and meat.

Dr. Shahriar Behboudi, head of the avian immunology group at Pirbright, said, "Some viruses exploit host cell machinery to produce components required for their replication and spread. We found that MDV uses the host cells to produce and store fats, contributing to replication of virus and possibly clogging the arteries."

This study was funded by the U.K.'s Biotechnology & Biological Sciences Research Council.

Evolution of Marek's Disease in Poultry – Secrets Revealed

April 24, 2019 **USPOULTRYWire@uspoultry.org**

2 pieces of research are helping unravel the complex nature of Marek's Disease Virus (MDV), which is a major threat to the global poultry sector, costing the industry up to $ 2billion worldwide. Its ongoing evolution continues to threaten the sustainability of poultry farming, but so far little is known about its genetic diversity. Now, scientists from Pennsylvania State University, United States, have had research published into the diversity of MDV on 19 Pennsylvanian farms over a 3-year period.

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The "switch" that can make current Salmonella outbreaks even worse

By Dan Flynn on April 16, 2019 from FoodSafetyNews.com

There are three current multistate outbreaks of Salmonella in the United States. Two – infections linked to Butterball Brand Ground Turkey and Precut melons – are outbreaks that began in 2019 and the third involving ground turkey was a 2018 outbreak of raw ground turkey products that remain open.

Taken together, the three have sickened 279 people resulting in 107 hospitalizations and one death. One or the other of these outbreaks has spread the Salmonella infections to nearly every one of the 50 states.

How were these outbreaks possibly made worse?

It can happen, according to Yaohui Sun and Alex Mogilner of New York University. **Salmonella bacteria can "flip an electric switch" as they catch a ride inside immune cells, causing migration out of the gut to invade other parts of the body.**

Sun, Mogilner and their NYU colleagues discovered how the switching mechanism works, sometimes upping the toxicity of Salmonella, a common food-borne pathogen that comes in hundreds of strains or stereotypes. Their findings were reported in the open-access journal PLOS Biology on April 9.

Salmonella causes over 400,000 deaths each year, making it both the commonest and deadliest cause of food poisoning, according to the NYU study. Deaths result when the bacteria escape the gut inside immune cells called macrophages.

"Macrophages are drawn to bacteria in the gut by a variety of signals, most prominently chemicals released from the site of the infections," according to Science Daily's summary of the study. "Once there, they engulf the bacteria like a regular part of their infection-fighting job."

But they might not remain there. They might enter the bloodstream "disseminating the bacteria and greatly increasing the gravity of the infection."

The NYU researchers found tissues in the gut can generate electrical fields that can drive the migration of cells, including macrophages.

In the new study, PLOS reports the authors first showed that the lining of the mouse cecum (the equivalent of the human appendix) maintains a cross-membrane electrical field and that Salmonella infection altered this field and contributed to the attraction of macrophages.

Measurements of the polarity of the local charge indicated that the macrophages were attracted to the anode or positively charged pole within the field. Once they engulfed bacteria, however, they became attracted to the cathode and reversed their migratory direction, moving away from the gut lining, toward vessels of the circulatory system. This switch was driven by an in the composition of certain charged surface proteins on the macrophages; the mechanism by which bacterial engulfment triggers this change is still under investigation.

"Dissemination, rather than localized infection, is the greatest cause of mortality from Salmonella (and other food-borne bacteria), and so understanding more about this polarity switch is likely to help develop new treatments to reduce deaths from food-borne bacterial infections," Mogilner told Science Daily.

To see the rest of this article go to: https://www.foodsafetynews.com/2019/04/the-switch-that-can-make-current-salmonella-outbreaks-even-worse/ ◻

Researchers predict increasing severity of Salmonella outbreaks

By News Desk on May 02, 2019

Future Salmonella outbreaks are likely to become more severe, according to researchers from an Australian university. The team from the University of Sydney used more than 17,000 Salmonella Typhimurium isolates collected from 2008 to 2016 to demonstrate that genetic networks of Salmonella are linked through a few degrees of separation, likely indicating an increasing severity... **Continue Reading** ◻

Effect of Heat Treatment and Feed Acidification on Feed Quality and Salmonella

Salmonella is a heat sensitive bacteria, so heat treatment of feed during preconditioning has become standard practice to improve feed hygiene. The dilemma with this strategy is that pelleting offers no protection against recontamination of feed. *Click here for full article* ◻

Salmonella Control in Broiler Breeders

The ultimate goal is to control and eliminate all Salmonella species and pathogens from the breeding program. The ability of the primary breeder to supply Salmonella free parent stock to the broiler industry is a key component of this industry's attempts to reduce or eliminate Salmonella from the finished product, as well as meet increasingly stringent export requirements. *Click here for full article* ◻

Preharvest reduction of Salmonella, Campylobacter key to better control efforts

March 18, 2019 from PoultryHealthToday.com By Abhinav Upadhyay and Dan J. Donoghue - University of Arkansas

In the last 50 years, the US poultry industry has evolved from a fragmented business into one of the most successful sectors of agriculture due to good farm practices and improvements in production and processing technologies. Despite these advancements, the microbiological safety of poultry products remains a formidable challenge.

Contaminated poultry has been associated with at least 14 multi-state outbreaks, resulting in over 1 million cases of foodborne illnesses in people over the past decade. *Salmonella* and *Campylobacter* are the two bacterial pathogens responsible for most cases. An estimated 10% to 29% of *Salmonella* infections and 43% of illness due to *Campylobacter* are associated with contaminated poultry.

The most commonly detected Salmonella serovars in poultry are Salmonella Enteritidis, Salmonella Typhimurium and Salmonella Heidelberg – all pathogens that can lead to food poisoning in people. Most cases of foodborne illness involving Campylobacter are due to C. jejuni.

Some progress has been made. The prevalence of *Salmonella* in US poultry products is the lowest it's been since 2002. Nevertheless, poultry companies are under increased pressure to further improve food safety, especially since USDA tightened its standards for the maximum acceptable limits of *Salmonella* and *Campylobacter* found at processing.

It's becoming apparent that an important first step toward producing a microbiologically safe product has to start preharvest, during live production, instead of depending on the processing plant to minimize the prevalence of foodborne pathogens.

A receptive host

Salmonella and *Campylobacter* are difficult to manage because chickens are a reservoir host. Both pathogens have genes enabling them to evade the chicken's immune system, survive the gut environment and utilize host resources for energy production — all factors that help them colonize the gut in high numbers.

Several factors can predispose birds to colonization by *Salmonella* and *Campylobacter*. These include the gut's microbial composition and the presence of immunosuppressive disease. It's possible that older birds may have a higher prevalence of *Salmonella* and *Campylobacter* and that certain lines of chickens are more or less resistant to them — both possibilities under investigation.

Management considerations

Farm management factors contributing to the prevalence of *Salmonella* and *Campylobacter* during live production include stress due to overcrowding, insufficient biosecurity and contaminated litter or feed.

Reducing bird density is the obvious way to prevent overcrowding and poultry companies are generally well-versed about biosecurity. Strategies to reduce contamination in litter include composting and the addition of chemicals such as alum, lime and heat treatment. Similarly, for preventing feed contamination, good environmental hygiene and regular testing for pathogens is critical.

Breeder vaccination

Salmonella vaccines for broiler breeders aimed at providing protective immunity to their offspring are in high demand and have shown significant efficacy. Broilers from breeders vaccinated against *Salmonella* have less of the pathogen at processing, and a dramatic reduction in human *Salmonella* cases in the United Kingdom has been attributed in large part to vaccination of breeders against *Salmonella*.

Vaccination of breeders must be administered at the right time to convey material antibodies to their progeny. Studies indicate this can be accomplished with vaccination between 11 to 18 weeks of age. It's important to make sure the vaccine used is effective against multiple serotypes of *Salmonella* and that it provides cross-protection.

Broiler vaccination

Vaccination of broilers is challenging due to the cost of vaccinating huge numbers of birds that are often raised to only 5 or 6 weeks of age. In addition, vaccination during the first week of life may have limited efficacy due to an immature immune system. There is evidence, however, that broilers can be successfully vaccinated with a modified live *Salmonella* vaccine.

With rising concern that antibiotic use in food animals may contribute to antibiotic resistance, vaccination of broilers against *Salmonella* is likely to become more prevalent, but the poultry industry needs improved vaccination strategies that are economical and easy to administer.

Developing an effective vaccine against *Campylobacter* for chickens is another matter. It's problematic due to the extensive diversity in the pathogen's genome and surface-expressed proteins. Several vaccination strategies, including killed and flagella-based vaccines, have been tested, but provide only moderate protection, indicating more research is needed.

Prebiotics and probiotics

Another approach aimed at reducing the colonization of *Salmonella* and *Campylobacter* in the gut is the use of prebiotic and probiotics in feed or water.

(continued on page 17)

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Preharvest reduction of Salmonella, Campylobacter key to better control efforts *(continued from page 15)*

Prebiotics are ingredients that nourish good gut microorganisms and may promote resistance to colonization of harmful pathogens. They aren't digested by the body and have been described as food for probiotics.

Popular prebiotics are fructans and galactans. Numerous studies indicate they can enrich beneficial gut bacteria such as Lactobacillus and/or Bifidobacterium spp. These beneficial microbes in turn reduce colonization by Salmonella[19] and Campylobacter[20]. Some prebiotics such as mannan oligosaccharide can bind and remove pathogens from the intestinal tract and simulate the immune system.

With advances in microbiome research, our understanding of gut microbiota composition and substances that modify the microbiota has improved. This has expanded the prebiotic concept to include new compounds such as yeast-based products and dietary fibers.

Probiotics are live, beneficial gut microorganisms. Competitive exclusion is a popular, on-farm, method that employs one or more probiotic bacteria to establish in the chicken gut and exert colonization resistance to incoming pathogens.

Laboratory testing of candidate probiotics against *Salmonella* and *Campylobacter* often yields promising results, however, when tested in the field, their efficacy varies. Hopefully this outcome will change with recent advancements in next generation sequencing technologies that make it possible to study the interactions between probiotics, target pathogens and other gut microbiota.

Promising compounds

Significant research conducted by our group and others in the last two decades has identified a plethora of compounds with significant antimicrobial efficacy. These compounds could be used in feed or water and include fatty acids, polyphenols, flavonoids, lectins and tannins.

Addition compounds with promise for controlling *Salmonella* and *Campylobacter* are caprylic acid obtained from coconut oil, trans-cinnamaldehyde from cinnamon bark, carvacrol from oregano oil and eugenol from clove oil.[22,23]

Future possibilities

Besides vaccination as well as the use of compounds with antimicrobial activity, future research might lead to the development of new chicken lines with improved resistance traits against *Salmonella* and *Campylobacter*.

Although concern about the possible development of resistance has led to the elimination or reduced use of antibiotics in food animals, research might eventually lead to ways antibiotics can be used to improve food safety without the development of resistance.

Recent findings from human research, for example, suggests that short courses of antibiotic therapy might be better than longer term administration and might actually reduce the development of resistance. At Ohio State University, researchers have found that supplementation of bacitracin in feed didn't affect *Salmonella* levels, but did lead to a reduction in the abundance of *Clostridium perfringens*, another pathogen that can make humans ill.

Summing up

It's clear the development of strategies for reducing the prevalence of *Salmonella* and *Campylobacter* during live production of poultry is sorely needed. We predict that new technologies and fresh ideas are paving the way for development of novel approaches that ultimately should enable the poultry industry to produce nutritious and microbiologically safe poultry products.

A complete list of references can be found in the link which do include some of Dr. Indu's work, former Poultry Specialist at TN Tech Univ.

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Moving Up: Vaccinating Broilers May Help Poultry Companies Improve Salmonella Ratings

Vaccinating broilers against Salmonella could be an effective live-side intervention for obtaining higher ratings in the Salmonella categorizations established by the USDA's Food Safety and Inspection Service, according to Kalen Cookson, DVM. "We believe vaccination can really make a difference" for producers trying to get their Salmonella loads down coming into the plant, Cookson told Poultry Health Today.

Click here for full article

Dirty Chick Boxes Can Be Source of Salmonella at Hatcheries

Dirty chick boxes at hatcheries can be a source of Salmonella, but the risk was still lower than expected in a study conducted at one US hatchery, according to Kathryn McCullough, a DVM candidate at North Carolina State University. McCullough's study was aimed at pinpointing where hatcheries need to focus their Salmonella-control efforts to prevent contamination of chicks with the pathogen.

Click here for full article

CDC: Campylobacter, salmonella infections on the rise

By Susan Kelly on 4/26/2019 in MeatingPlace.com

Rising rates of campylobacter and salmonella infections are among the key findings in 2018 surveillance data from the U.S. Centers for Disease Control and Prevention.

The Foodborne Diseases Active Surveillance Network (FoodNet) report covers laboratory-diagnosed infections caused by eight pathogens at 10 sites representing 15% of the U.S. population.

The incidence of most infections is increasing, the report said, which could be partly due to increased use of culture-independent diagnostic tests. In 2018, the program identified 25,606 illnesses, 5,893 hospitalizations and 120 deaths.

Campylobacter has been the most commonly identified infection in FoodNet sites since 2013, and the incidence appears to be increasing, CDC said. Poultry is a major source of campylobacter bacteria, the agency noted.

Salmonella infection is the second most common infection, and the incidence has not declined compared with the previous three years. The three most common salmonella serotypes were enteritidis, newport, and typhimurium.

Enteritidis infections have not declined in more than 10 years despite regulatory programs intended to reduce salmonella in chicken and eggs, both of which are important sources, the report said.

The incidence of cyclospora infections increased markedly, in part because of large outbreaks associated with produce, a major source of foodborne illnesses, the CDC said. □

'Causal' pie chart can help manage necrotic enteritis

April 19, 2019 in Poultry Health Today

Use of a simple "causal" pie chart is proving to be a helpful tool for controlling necrotic enteritis (NE), Joel L. Cline, DVM, a veterinarian with Wayne Farms, told *Poultry Health Today*.

Cline uses the causal pie as a visual to help poultry farmers and managers understand the many factors that can lead to NE. He has found that, in turn, managers have found the chart useful for educating their employees about NE.

He learned about the pie chart from a student riding with him, Cline noted. He thought she'd made it up, but when he went home and searched for it on the Internet, he found "it's a real thing that epidemiologists use to describe and understand diseases that have many contributing factors."

The first slice of pie Cline puts on an NE chart is *Clostridium perfringens*. "That's the piece of the pie you have to have…and maybe when we pull the antibiotics, that piece gets larger. It fills in more of the pie because we don't control that *Clostridium* as well or maybe it's there, but we just don't make it behave like we do with antibiotics," he said.

Coccidiosis — an important piece of the pie

Coccidiosis is another important piece of the pie. "You can have necrotic enteritis without coccidia, but for us it's usually there and it's usually a contributing factor," he continued.

There are many other factors that can contribute to NE ranging from vaccination programs to a flock's immune status to litter management or how drinkers and feed ingredients are managed. Pieces of the pie may differ for different farms.

Cline acknowledged that not all contributing factors can be controlled, but he emphasizes managing those that can be moderated.

"We formulate our management processes for any issue we think might be contributing to necrotic enteritis. And then we put programs in place to manage each of those issues, and we go back and check to make sure we're doing what we think we're doing…" Cline said.

Making progress

Wayne Farms is now raising a significant portion of its flocks without antibiotics. Cline indicated that while it's been challenging, "I think we're making progress." He also thinks that the experience has made him a better veterinarian.

Antibiotics were a "kind of crutch," and with that taken away, the hatcheries are cleaner and there's a better understanding of what's going on in the intestines. "It's given me a deeper knowledge, and I just think it's helped me learn to pay attention to the details better," he said.

Using coccidiosis as an example, Cline said, "If we're vaccinating, it's how we handle the vaccine. The right temperatures…how we apply the vaccine. It's how [we manage] exposure in the field, turn-out times, things like that. Just managing those tightly. If we're using coccidiostats…it's how we apply those, how we rotate, making sure we have in the feed what we think we have in the feed and just managing all those small parts more closely."

To view the podcast, go to: https://poultryhealthtoday.com/causal-pie-chart-can-help-manage-necrotic-enteritis/?utm_source=Poultry+Health+Today+Newsletter&utm_campaign=8299960d81-AAAP_antimicrobial_stewardship_PHT_1_8_2018_COPY_0&utm_medium=email&utm_term=0_5ac605299a-8299960d81-252086165 □

Gene study to investigate how flu jumps species

Mar 25, 2019 by **Jake Davies** in **PoultryWorld.net**

A new study will aim to identify the genes that are important in reducing infection by Influenza A virus in pigs and chickens, and genes that limit the spread of the virus to people.

Jumps to new species are relatively rare because the virus has to adapt to the new species and because a specific 'arm' of the immune system – called the host interferon response – represents a significant barrier to the virus spreading from animals to people.

The study will investigate which genes are important for inhibiting replication of Influenza A virus in pigs and chickens and which genes of the host interferon response limit the spread of the virus from animals to people.

The research, which will receive over £750,000 from the UK Government's Biotechnology and Biological Sciences Research Council, hopes to improve understanding of how to combat influenza strains.

The Roslin Institute's Dr. Finn Grey will lead the research. She said: "Research of livestock influenza infections is critically important, both in terms of economic burden and the potential for pandemic human outbreaks.

"This research, along with the recent development of genome wide CRISPR libraries for livestock species, places The Roslin Institute at the forefront of cutting edge systematic approaches in livestock species."

Work will be conducted in collaboration with Roslin scientists Professor Paul Digard, Dr. Kenneth Baillie and Dr. Jacqueline Smith as well as Dr. Sam Wilson from the Centre for Virus Research of the University of Glasgow. □

Chicken Gene Edit Prevents Avian Flu Virus Spread

June 4, 2019 in Feedstuff.com

Researchers in the U.K. have used gene editing techniques to stop the avian influenza virus from spreading in laboratory-grown chicken cells, according to the University of Edinburgh. The findings raise the possibility of producing gene-edited chickens that are resistant to the disease, the university said.

The researchers prevented the flu virus from spreading by deleting a section of chicken DNA inside the lab-grown cells, the announcement said. The next step will be to try to produce chickens with the genetic change.

Scientists targeted a specific molecule inside chicken cells called ANP32A. Researchers at Imperial College London found that during an infection, flu viruses hijack this molecule to help replicate themselves.

Click here for full article □

Variations in chicken genes could help fight viruses

April 15, 2019 by Tony McDougal in PoultryWorld.net

Researchers from the UK have identified variations in the genes of chicken antiviral proteins (IFITMs), which could have an impact on their ability to fight viral infections.

The collaborative study, carried out by The Pirbright Institute and Imperial College London, is the first of its kind to look at the natural genetic variations of IFITM genes across breeds, which could be used to inform commercial poultry breeding.

Published in the journal BMC Genomics, the team's research highlighted that there were naturally occurring differences in IFITM genes between four different groups of chickens - commercial, indigenous, inbred and rare breed. And genetic differences were also found within groups of related chickens.

Some of these variations may alter the IFITM proteins, suggesting that they could have functional consequences and may affect the ability of chickens to fight different viruses.

Responses to viral infections

Dr. Mark Fife, head of the Genetics and Genomics group at Pirbright, said the identification of genetic differences meant it was possible to work towards understanding how they affect the birds' responses to viral infections.

"If particular variations are found to provide extra protection, they could be selected for by commercial breeding programs to help make chickens more resistant to economically important diseases."

IFITMs are proteins found in many animals, including humans, that are activated by the immune system and stop viruses from entering and replicating in host cells. Changes in the genes of IFITM proteins can alter their activity and location, which has an effect on their ability to restrict viral infections.

Increasing the natural resistance of poultry to viral infections can supplement other ways of protecting food supplies, such as antibiotics and vaccines.

This in turn will help reduce industry losses and feed the growing global demand for poultry products, which by 2024, is expected to increase by over 20 million tons compared to 2015. □

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Histomoniasis: What the Experts Say

April 24, 2019 **USPOULTRYWire@uspoultry.org**

Histomoniasis, or blackhead, is a complex disease process. Although primarily affecting turkeys with lesions in the ceca and liver, blackhead can also have a significant impact on chickens (where lesions are often confined to the ceca only). Blackhead is caused by the protozoan flagellate, Histomonas (H.) meleagridis, which has a broad host range, infecting gallinaceous birds including pheasants, partridges, and bobwhite quails, in addition to chicken and turkeys.

With the ban on many of the drugs used to fight the disease, and changes in animal husbandry like reusing litter and/or increased stocking density, blackhead has re-emerged in many areas including North America and Europe. The focus for control of blackhead is now on prevention and the use of new diagnostic methods to better understand how to manage and eradicate the disease.

Click here for full article ◻

Aggressive vaccination of broiler breeders needed to keep reovirus in check

April 22, 2019 in PoultryHealthToday

Aggressive vaccination of broiler breeders for reovirus using live and inactivated vaccines has been one of the most important steps the US poultry industry has taken to maintain good protection against the disease, Guillermo Zavala, DVM, PhD, president of Avian Health International, told *Poultry Health Today*.

While autogenous vaccines have helped US poultry producers keep pace with the genetic changes of reoviruses, the original, federally licensed vaccines still form the core for most reovirus-vaccination programs and do a "very, very critical job" in establishing foundational immunity, he said.

Autogenous vaccines can be used to complement commercial vaccines but should not be a substitute for standard reovirus-vaccination programs. In addition, success with autogenous vaccines requires more than one diagnostic effort, he cautioned.

"You have to do enough sampling in the field. You have to do enough work in the laboratory. In other words, you have to do enough epidemiological investigation…," Zavala said.

Signs of trouble

Reovirus vaccination, he explained, is aimed at hyper-immunizing broiler breeders to prevent vertical transmission to offspring. It can also provide maternal antibodies that should protect young broilers for the first 18 to 24 days. Thereafter, broilers need to develop their own active immunity, which can only be accomplished by exposure to field viruses or by vaccination. Vaccination of broilers is unnecessary if breeders are adequately immunized, Zavala said.

When reovirus does emerge, it's generally in broilers that did not receive adequate immunity against the disease. The virus affects tendons and joints, and it can also affect the intestines. Birds with significant intestinal reovirus infection won't convert feed as well. They will express uniformity problems and take longer to reach market age, Zavala said.

Once the intestinal tract is damaged — whether it's reovirus alone or co-infections with other agents — the door is open for many types of complications, including secondary bacterial infections as well as other viruses.

Broiler flocks with reovirus may have increased condemnations at processing, particularly due to synovitis. Zavala said that should prompt questions. "Am I too lax with my vaccination program? Am I using not enough killed vaccines or not enough live vaccines or do I need to add an autogenous product?" he continued.

As with any infectious disease, protection against reovirus also requires guarding against immunosuppressive diseases such as Marek's, infectious bursal disease or chicken infectious anemia virus. Immunosuppression can also be caused by other factors such as stress, suboptimal management or even mycotoxins in the feed.

"And I always tell people…you can have reovirus circulating in your farms and you may not have an economic or clinical problem, but you'll start noticing it if you don't protect your birds against immunosuppressive disease…" ◻




Cold plasma can kill 99.9 percent of airborne viruses: study

By Julie Larson Bricher on 4/16/2019 in MeatingPlace.com

Dangerous airborne viruses are rendered harmless on-the-fly when exposed to energetic, charged fragments of air molecules, University of Michigan (UM) researchers have shown.

The UM engineers have measured the virus-killing speed and effectiveness of non-thermal plasmas, the charged particles that form around electrical discharges such as sparks. A non-thermal plasma reactor was able to inactivate or remove from the airstream 99.9 percent of a test virus, with the vast majority due to inactivation.

Achieving these results in a fraction of a second within a stream of air holds promise for many applications where sterile air supplies are needed, the research team suggested.

"The most difficult disease transmission route to guard against is airborne because we have relatively little to protect us when we breathe," said Herek Clack, UM research associate professor of civil and environmental engineering.

Clack and his research team have begun testing their reactor on ventilation air streams at a livestock farm near Ann Arbor. Animal agriculture and its vulnerability to contagious livestock diseases such as avian influenza has a demonstrated near-term need for such technologies. □

New Research Shows That Heating Can Replace Disinfection Chemicals in Poultry

June 4, 2019 by The Poultry Site

Researchers at the University of Delaware tested the efficacy of heat to disinfect poultry houses. The researchers were specifically examining whether heat treatment was comparable to chemical disinfection protocols, and the feasibility of heat treatment as an intervention against poultry diseases like Newcastle disease, avian influenza and salmonella. The study's objectives were to determine the appropriate temperature, time and humidity necessary to decontaminate poultry houses. The researchers also wanted clarity on how much organic matter (in terms of depth) could be treated with heat alone. The study team also wanted to see if this method was suitable for field conditions.

Results from the study demonstrated that maintaining the required temperature profile in the entire poultry house was a critical element of decontamination. They also found that heat treating during colder months was not as effective, since the soil did not reach a high enough temperature to neutralize the bacteria and viruses.

The researchers were able to show that heat treatment was effective in thin layers of soil and organic matter (about 2.5cm or less). Therefore, it is an effective means of disinfection after litter and carcass removal, since only a thin layer of organic material would remain in the poultry house. However, the researchers noted that if heat treatment occurred before carcass and litter disposal, the litter should be viewed as contaminated waste since the heat treatment may not have been completely effective.

Click here for full article □

Recipe for pathogen destruction: A little air, a little electricity, a flip of a switch

May 19, 2019 in FoodSafetyNews.com by a Guest Contributor

What if you could kill 99 percent of the potentially harmful bacteria on the surface of your fresh produce in one minute with just the flip of a switch? Consumers could have devices similar in size and operation to a microwave oven, while restaurants and food processors could have larger devices built into their production and processing lines – no water, no waste, no antimicrobial resistance, minimal chemical residues, and completely sustainable with only a small amount of electricity and air needed. This has become plausible due to research at the University of Maryland (UMD) focused on innovative work in low-temperature plasma science.

In a recent paper published in *Plasma Processes and Polymers*, researchers from Materials Science and Engineering (MSE) with the Institute for Research in Electronics and Applied Physics (IREAP) and Nutrition & Food Science (NFSC) in the College of Agriculture & Natural Resources (AGNR) reported 99% *E.coli* kill on the surface of fresh produce after just one minute of treatment in a process called etching and surface modification, where the tiniest layer of the outer membrane of bacteria is damaged using what is essentially electrified air, also called plasma.

"Plasma is what's called the fourth state of matter, and it is technically the most abundant state of matter in the universe," explains Gottlieb Oehrlein, MSE professor. "There are the solid, liquid, gaseous, and the plasma states of matter. The latter is an electrified gas and the most energetic and reactive state of matter. We can use electrical energy to produce this state from air, and the reactive species generated have very strong impacts on pathogens where they can etch part of their outer membranes and change them biochemically."

Oehrlein and his team are known in the field of plasma science for their work on plasma-material interactions. Most people think of plasma as the technology behind plasma televisions and computer chips, but this electrified air can be used in many other ways. In fact, it is already prominently used in the healthcare industry to sanitize surgical tools, and clinical trials in dermatology have also been performed for the treatment of chronic skin diseases. The plasma is concentrated to look like a very tiny blowtorch, but cold to the touch.

continued on next page

Recipe for pathogen destruction: A little air, a little electricity, a flip of a switch

(continued from previous page)

"Microscopically the bacteria surface is bombarded by these exotic plasma species. This leads to material removal and surface modification," says Pingshan Luan, lead author on this work and a recent graduate from MSE. "Once the composition is changed, the bacteria cell wall loses its functional and structural integrity."

This is what makes the concept of antimicrobial resistance irrelevant in a process like this, because the changes are structural, making this a very appealing option for food sanitation. "Resistance would never happen with plasma because this is structural stress and breakdown," says Oehrlein. It is also a cold process unlike a traditional blowtorch, which is perfect to protect food quality. "Right now, there is an explosion of interest in plasma sterilization for food, and this work provides some mechanistic understanding on processes that are operative," adds Oehrlein.

This is in part due to the recent rise in foodborne illness outbreaks and the increased attention to food safety. People are making healthier food choices, driving a greater demand for fresh and unprocessed food. Fresh fruits and vegetables are often consumed raw, contributing to increases in foodborne disease outbreaks from 0.70% in the 1970s to 33% in just 2012 alone. While foodborne illness from fresh produce is quite rare, the need to ensure that these products are properly sanitized before consumption is apparent.

"The U.S. has the one of the safest food supplies, but fresh produce is still a substantial source of outbreaks," explains Rohan Tikekar, NFSC assistant professor. "The problem is that we don't have a kill step for our fresh produce. We harvest them, we might do some postharvest cooling, then we may wash the produce to pack it and ship it."

However, even washing produce can be problematic. "The washing process is a double-edged sword," says Tikekar. "It makes produce look appealing and removes dirt, but if it is not done properly, water becomes a carrier for this small amount of bacteria to spread to a larger batch of produce. You may start out with say 10 lettuce heads that are contaminated, and with improper washing, you might end up with 10 tons of lettuce that is contaminated."

On top of that, this process is highly resource intensive and not particularly environmentally friendly. "Washing of produce is an energy and resource-intensive operation, and while the numbers vary, you could use as much as 10 pounds of water per pound of produce," says Tikekar. "This can be a major source of water consumption. In addition, typically you have to chill the water to maintain the quality of the produce, so the whole process is refrigerated which takes a lot of energy. What we have been doing is adding chlorine-based sanitizers to the water, and this way the bacteria gets killed before it gets transferred to another product. This is highly effective, but chlorine-based sanitizers also dissipate quickly, and you have to replenish these continuously to maintain chlorine levels. While this is safe and effective, there are limitations to this process, and there is a push to find alternative methods to compete with chlorine as a food sanitizer due to perceptions and issues of resistance."

Plasma for food sanitation is a sustainable, chemical-free process, which makes it appealing. "Conventional decontamination processes use a lot of water and aqueous sanitizers such as chlorine and chlorine dioxide. The water bill – eventually paid by the consumers – is very high," explains Luan. "The plasma approach doesn't use any water. Pretty much all we need is a little electricity and air. Air is pretty much free and electricity is only about 12 cents per kilowatt hour. With our technology, you could sanitize all three meals a day and it wouldn't cost a single dime. The process is environmentally friendly and can also be integrated easily into existing food processing lines like conveyor belts."

According to Oehrlein, it could be as easy as "flipping a light switch on and off." Tikekar says, "You could do this at an industrial scale but you can also imagine doing it at a restaurant scale, dining halls, or even individual consumers' levels where you can potentially have a microwave-like device that could inactivate pathogens just prior to consumption." Luan adds, "With one minute of treatment, you can kill more than 99% of the bacteria on spinach leaves, so it is very effective."

While there is little risk associated with this process, researchers are prepared to dig into this in the future. "Side effects of our processing technology are still being examined, so in the future we will look more closely at the change in nutritional content," says Luan. "The only thing so far tested is the physical appearance of the food, but nutrients like vitamins and antioxidants haven't been characterized. However, from our experience, plasma is a surface processing technology, and the affected volume is usually within a couple tens of nanometers from the surface, which is about a ten millionth of the green leaf, so it is unlikely that the nutritional content is greatly affected. We are still looking into all potential side effects before this technology can be used, but the potential is there and very promising."

The paper entitled "Decontamination of raw produce by surface microdischarge and the evaluation of its damage to cellular components" is published in *Plasma Processes and Polymers* and available here.

About the source: *Chartered as the Maryland Agricultural College on March 6, 1856, the College of Agriculture and Natural Resources is the cornerstone of the University of Maryland system, built upon a foundation of sound science, ground breaking research, and Maryland pride. This article, written by Samantha Watters and reposted here with permission, was originally published by the College as a discussion of researchers' published findings on using plasma science to eliminate water, waste, chemicals, and antimicrobial resistance risk.* □

Propane spot prices are the lowest they've been since Sept. 2016

News flash

SPOT PRICING: Mont Belvieu Propane Spot Price on June 3, 2019 was at a current level of $0.478, down from 0.92 one year ago. This is a change of -48.04% from one year ago. ***This is the lowest spot price for propane since mid-Sept. in 2016.*** The highest spot price to occur this year was on Feb. 22nd at $0.720.

Allowing for an average of $0.41 per gallon for tariffs, handling and delivery to most areas, **the average current retail price is roughly $0.89/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 https://ycharts.com/indicators/mont_belvieu_propane_spot_price.

Propane inventories rise: U.S. propane/propylene stocks increased by 2.5 million barrels last week to 68.3 million barrels as of May 31, 2019, 9.1 million barrels (15.4%) greater than the five-year (2014-2018) average inventory levels for this same time of year. Gulf Coast inventories increased by 1.2 million barrels, and Midwest and East Coast inventories each increased by 0.7 million barrels. Rocky Mountain/West Coast inventories decreased slightly, remaining virtually unchanged. Propylene non-fuel-use inventories represented 7.2% of total propane/propylene inventories.

EMERGENCY DECLARATION: The Federal Motor Carrier Safety Administration (FMCSA) extended a Regional Emergency Declaration until July 2, 2019 due to flooding events for 16 states, which includes TN, KY, AR and MS.

The emergency declaration waives hours-of-service requirements for those providing assistance to the affected states, including the delivery of fuel, equipment, and supplies**. The declaration does not apply to those unaffected by the flooding.** Drivers operating under the terms of the FMCSA Regional Declaration may keep a copy of the declaration in the vehicle.

Download the FMCSA Regional Declaration □

Court Invalidates 2015 WOTUS Rule

The U.S. Court for the Southern District of Texas on Tuesday, May 28, remanded the Environmental Protection Agency/Army Corps of Engineers 2015 "Waters of the U.S." rule that greatly expanded the regulatory reach of the agencies' authority to thousands of isolated or small (e.g., depressions, ditches, etc.) waters and drainage features. While several courts have issued injunctions on implementing the rule pending the outcome of several lawsuits, this was the first decision to rule on the legitimacy of the process to finalize the 2015 rule. The Southern District of Texas decision, to which U.S. Poultry & Egg Association was a party, concluded that the agencies erred in following legal guidelines when the agencies issued the 2015 regulation without giving an opportunity to comment on a key report cited for much of the more controversial provisions of the new rule.

Click here for full article in USPOULTRY Wire □

Breeding for a Sustainable Industry

April 8, 2019 in Zootecnica

There is a misconception that breeding companies only select for traits that have a clear, direct economic impact: selection for increased first quality egg production, improved livability and improved feed efficiency. The improvements in the aforementioned traits have contributed significantly to a more sustainable egg industry, resulting in an affordable high-quality, animal protein. But today's definition of sustainability does not only consider the economy, the productivity and the environmental impact, but also animal welfare and public health.

Click here for full article ◻

Considerations for a Better Quality of Chick

April 24, 2019 **USPOULTRYWire@uspoultry.org**

During the incubation period, embryonic growth and development are affected by different factors, as breeder age, the incubation temperature and the availability of egg nutrients, which reflect on chick's quality.

Click here for full article ◻

New embryo monitor to hit the market

Jan 23, 2019 PoultryWorld.net

A technology firm focused on improving egg hatchability says it has developed the first embryo monitor capable of directly identifying their physiological condition.

The non-invasive CrystalEgg system, from LIVEgg, sits within an incubator and can detect in real time an embryo's developmental stage, or whether it is dead or infertile, according to the company.

Sensors collect physiological parameters from the embryo and apply advanced algorithms to analyse it, thus providing accurate real-time data on the embryo's stage and condition.

It claims that, by the seventh day of a 21-day hatching cycle, it can provide accurate information on expected hatching, mortality, infertility and other factors. LIVEgg claim a 3%-4% improvement to hatching rates.

"Even the top-scale incubators can only monitor the environmental factors within the incubator, but using environmental factors only limits the ability to take care of the embryos' well-being during the hatching cycle," said LIVEgg chief executive Alon Blum. "Until now, the developmental stage and the embryo's condition during a hatching cycle was a real enigma."

"CrystalEgg offers hatchery managers, owners and integrators crystal clear observation of the embryo, providing improved control and a totally new set of information unavailable to date," he added. ◻

WHAT DO YOU WANT TO READ ABOUT?

Let us know topics that are of interest to you and we'll do our best to include them in our upcoming newsletters. Email tracy@tnpoultry.org.

CDC: Preliminary Incidence and Trends of Infections with Pathogens Transmitted Commonly Through Food — Foodborne Diseases Active Surveillance Network, 10 U.S. Sites, 2015–2018

Foodborne diseases represent a major health problem in the United States. The Foodborne Diseases Active Surveillance Network (FoodNet) of CDC's Emerging Infections Program monitors cases of laboratory-diagnosed infection caused by eight pathogens transmitted commonly through food in 10 U.S. sites.* This report summarizes preliminary 2018 data and changes since 2015. During 2018, FoodNet identified 25,606 infections, 5,893 hospitalizations, and 120 deaths. The incidence of most infections is increasing, including those caused by Campylobacter and Salmonella, which might be partially attributable to the increased use of culture-independent diagnostic tests (CIDTs). The incidence of Cyclospora infections increased markedly compared with 2015–2017, in part related to large outbreaks associated with produce (1). More targeted prevention measures are needed on produce farms, food animal farms, and in meat and poultry processing establishments to make food safer and decrease human illness.

Click here for full article ▫

Cooling chickens with sprinklers has multiple benefits

June 4, 2019 in PoultryHealthToday.com

Many people believe high temperatures kill chickens, but that's not necessarily the case, according to Tom Tabler, PhD, Mississippi State University.

"Chickens can tolerate fairly high temperatures if the humidity is low. It's the combination of temperature and high humidity that's deadly," he writes in an article for *Poultry Health Today*.

He urges producers to consider sprinkler systems for managing both heat and humidity.

Click here to read the entire article ▫

Publisher's Platform: It's past time to offer foodservice workers Hep A vaccinations

Apr 22, 2019 by Bill Marler in FoodSafteyNews

Vaccinating food service workers will not solve the entire HAV problem — we need a nationwide focus on homelessness and drug use as well. According to a recent health warning, the CDC reported multiple states across the country have reported outbreaks of hepatitis A (HAV), primarily among people who use drugs and people experiencing homelessness. Since…
Continue Reading ▫

US Updates National Poultry Improvement Plan

The U.S. Department of Agriculture's (USDA) Animal & Plant Health Inspection Service (APHIS) is set to release proposed reforms to the country's National Poultry Improvement Plan (NPIP), a decades-old cooperative federal-state-industry mechanism for controlling poultry disease threats.

Click here for full article ▫

Flood Damage May Be Upwards of $12.5 Billion in Losses

The total damage and economic loss caused by record-breaking flooding in the Midwestern U.S. this spring will total $12.5 billion, based on an analysis of damages already inflicted and those expected by additional flooding, as well as the lingering health effects resulting from flooding and the disease caused by standing water according to AccuWeather.

The flooding erupted in the wake of a historic bomb cyclone and the economic damage rivals that of some of the worst hurricanes to hit the U.S. The $12.5 billion estimate for flooding this spring would compare to Hurricanes Matthew (2016) and Irene (2011).

Click here for full article ▫

Study: Slower-growing birds would harm environment

ON MARCH 14, 2019 BY AUSTIN ALONZO IN WATTAGNET.COM

A new study estimates as many as 68 percent more slower-growing broiler birds would be needed to produce the same amount of breast meat as conventional birds.

Slower-growing broiler birds could bring a far more significant environmental and economic impact than previously estimated, according to a new study.

As part of the 2019 Midwest Poultry Federation Convention in Minneapolis, Dr. Anthony Pescatore, associate chair and extension professor at the University of Kentucky's College of Agriculture, Food and Environment, shared the results of his work studying the performance of a conventional broiler bird and a slower growing bird. Pescatore spoke on March 12.

The study compared the performance of a conventional, white Cornish Cross breed and a slower growing, brown Red Ranger bird as well as a number of heritage breeds. The time it took the birds to grow to market weight, as well as other factors like feed conversion ratio and final without giblet weight were also monitored.

After analyzing the performance figures, the researchers estimated how many real world resources it would take to produce the same amount of meat from both the Cornish Cross and Red Ranger.

According to the study, the following increases would be needed to produce 1 million pounds of whole carcass without giblets:

- 9 percent more birds
- 45 percent more time in the houses
- 7 percent more houses
- 28 percent more feed
- 27 percent more trucks to deliver more feed
- 9 percent more trucks to take birds to processing plant
- 9 percent more water for processing
- 36 percent more offal

However, the vast majority of chicken products sold and consumed in the U.S. are not whole birds. Consumers prefer breast meat. So, the study estimated how many resources would be needed to produce 1 million pounds of breast meat.

The following increases would be needed:

- 68 percent more birds
- 45 percent longer in the house
- 66 percent more houses for the extra birds
- 97 percent more feed
- 100 percent more trucks to deliver feed
- 68 percent more trucks to take birds to the processing plant
- 68 percent more processing water

The production of just breast meat would also increase in more legs and wings, 73 percent more legs, about 100 percent more wings and 95 percent more offal.

"We've got to produce a lot of dog food," Pescatore said.

The study concluded that switching U.S. broiler production to a slower growing breed will impact the economics and sustainability of the broiler industry and ultimately have a negative impact on the environment. □

Gizzard changes seen in NAE flocks but diagnosis is murky

March 21, 2019 in PoultryHealthToday.net

Podcast: Download

Raising broilers without antibiotics appears to be affecting the gizzard in ways that aren't yet fully appreciated, and it's not clear if the changes observed are true gizzard erosions, **Jessica Hockaday**, DVM, told *Poultry Health Today*.

During her residency at Mississippi State University, Hockaday conducted a field study for a poultry company that thought it had a problem with gizzard erosion in its "no antibiotics ever" (NAE) flocks. The company also raised conventional flocks, so Hockaday evaluated a total of 80 gizzards obtained from both flocks. Compared to gizzards from conventional flocks, gizzards from NAE flocks had more surface bacteria, she reported.

The tough layer made of the carbohydrate-protein complex koilin, which protects the muscles in the gizzard, was thicker and showed sloughing (shedding of dead skin) and edema (excess watery fluid).

continued on next page

Gizzard changes seen in NAE flocks but diagnosis is murky *(continued from previous page)*

Unexpected finding

In addition, gizzards from NAE flocks showed more hemorrhaging without inflammation in the koilin layer — an unexpected finding discovered during microscopic examination — that wasn't apparent upon gross examination, said Hockaday, now a veterinarian at **Aviagen**.

Gizzards from conventional flocks had thicker glandular layers and more inflammation compared to the gizzards from NAE flocks, she added. Were the changes seen in the gizzards of NAE flocks necessarily gizzard erosions? True gizzard erosion has been linked to many possible causes, Hockaday said, including viruses contracted from parent flocks, mycotoxins, nutritional issues and even chemicals such as formaldehyde, used as a disinfectant in the hatchery.

No ulceration

She noted that what she observed in her study doesn't match textbook descriptions of gizzard erosions. "…they looked grossly like they were gizzard erosions," but the ulcerations usually seen with erosions were not present.

This raises the question of whether the changes she has observed were, in fact, gizzard erosions or something else altogether, Hockaday said. Management changes, such as transitioning to NAE production or raising broilers in a pasture, might be leading to gizzard issues that aren't yet obvious, she said.

Perhaps the greatest need is for everyone to "be on the same page" regarding the definition of gizzard erosion and consideration needs to be given to other types of gizzard changes that might result from shifts in production practices, Hockaday said. □

Pilgrim's Veterinarian Shares Experiences with NAE Production

Preparation, meticulous attention to sanitation and improved communication with both the hatchery staff and growers are critical for successfully raising broilers without antibiotics, Elizabeth Dale, DVM, head veterinarian for Pilgrim's, told Poultry Health Today. Over 50% of Pilgrim's flocks are now raised with "no antibiotics ever" (NAE), in organic programs or with no human-use antibiotics, a program that includes ionophores. Antibiotics have not been used at any of the company hatcheries for nearly 3 years, Dale said.

Click here for full article in USPOULTRY Wire □

Additional Research Needed to Determine Peracetic Acid Exposure in Poultry Plants

May 23, 2019 – USPOULTRY and the USPOULTRY Foundation announce the completion of a funded research project at the Georgia Tech Applied Research Corporation in Atlanta in which scientists found considerable variation and lack of precision between tested methods related to exposure of peracetic acid. Peracetic acid has been used increasingly in the food and medical industries as a disinfectant, and its use in poultry processing has further enhanced food safety.

The research was presented at the Poultry Processor Workshop, held in Nashville, Tennesee, and is part of the Association's Board Research Initiative program. A brief summary of the completed project is shown below. A complete report, along with information on other Association research, may be obtained by going to USPOULTRY's website, www.uspoultry.org. The project summary is as follows.

Project #139303: An Analysis of Peracetic Acid Exposure in Poultry Plants: Modeling the Relationship of Titration Levels of Peracetic Acid in Water to Airborne Concentrations in the Workers Breathing Zone

(Jenny Houlroyd, Occupational Safety and Health Programs Office, Georgia Tech Applied Research Corporation, Atlanta, Georgia)

Jenny Houlroyd and researchers at Georgia Tech's Enterprise Innovation Institute recently completed a research project intended to increase industry knowledge of exposure to peracetic acid (PAA) by comparing four currently commercially available exposure monitoring methods and exploring if distance from a source of PAA changed airborne concentrations. The methods selected for use in this study had to be those that were readily accessible for a plant safety and health manager or USDA personnel to utilize for exposure assessment. There are currently no other (published) studies examining the three selected electrochemical PAA sensors with the traditional chemistry method. Data-logged results were then compared to air samples for PAA, which were collected using SKC Non-agency method 57 (based on the Hecht, et. al 2004 method).

The findings from the evaluation completed at three different poultry processing facilities indicate there is considerable variation and lack of precision between the methods tested. This lack of reliability was observed both between the measurement methods and within the individual measurement methods. The lack of reliability of the sampling methods indicates a need for additional research into a more stable, robust analytical method that is capable of producing consistent results. Poultry processing facilities are challenging environments for testing due to the number of potentially confounding variables present, including temperature, relative humidity, etc. Overall, based on the lack of consistency, precision and potential accuracy of the four tested sampling methods, caution should be exercised when interpreting the results of any single method at this time.

"This is a perfect example of research funds being rapidly deployed by USPOULTRY and the Foundation to help address an industry critical concern. Like most research, it's one more 'brick in the wall' that will assist our industry with continuous improvement in providing sustainable and wholesome products," said John Starkey, president of USPOULTRY.

The research summary can be found on the USPOULTRY website. Information on other Association research may also be obtained by visiting the USPOULTRY website, www.uspoultry.org. □

Developing and Implementing HACCP for the Meat and Poultry Industry

This program has been designed to meet the USDA's training requirements and is accredited by the International HACCP Alliance, whose goal is to provide standardized training for the meat and poultry industries. The course curriculum was developed by the American Meat Science Association to help processors understand, develop, and apply Hazard Analysis and Critical Control Point principles to their production operations. The program combines a unique level of lectures and work group discussions from a broad-based faculty of meat and poultry scientists, HACCP experts, and authorities from academia, industry and government. The work group sessions will include interaction with industry peers who have successfully implemented HACCP programs in their own plants.

Click here for full article ◘

Safe + Sound Week

WASHINGTON, D.C. – May 23, 2019 – The National Chicken Council (NCC), U.S. Poultry & Egg Association (USPOULTRY) and National Turkey Federation (NTF) are pleased to again partner with the U.S. Occupational Safety and Health Administration for Safe + Sound Week, Aug. 12 – 18. Safe + Sound Week is a nationwide effort to raise awareness and understanding of the value of safety and health programs that include management leadership, worker participation and a systematic approach to finding and correcting hazards in workplaces.

Safe + Sound Week is co-sponsored by the National Safety Council, American Industrial Hygiene Association, the American Society of Safety Engineers and the National Institute for Occupational Safety and Health. During Safe + Sound Week, USPOULTRY, NCC and NTF will highlight their commitment to worker safety and health by communicating with members and other audiences about the importance of workplace safety and encouraging their member companies to participate in Safe + Sound Week activities.

"USPOULTRY, NCC and NTF are pleased to serve as Safe + Sound Week partners and to collaborate with OSHA and the other sponsors on programs and initiatives to help ensure the safety of the U.S. poultry workforce," said John Starkey, USPOULTRY president; Mike Brown, NCC president; and Joel Brandenberger, NTF president, in a joint statement.

To learn more about Safe + Sound Week, click here. ◘

Preventing Litter Shed Fires

March 28, 2019 - TPA has had reports of two litter sheds catching on fire this Spring. Dr. Shawn Hawkins at UT reminds everyone of the following guidelines to best prevent spontaneous combustion from occurring:

- ***Don't stack litter higher than 5 feet.*** Litter self-insulates itself, which allows heat to build. Stacking litter at a more shallow depth helps to cut down on the building of heat. Also, if you stack litter too high then you are compacting the base (to push it up that high) which is not good and can contribute to fires.
- ***Don't pile litter against the flammable wood structure of the barn*.** This should be avoided altogether. Stack in the center of the shed and leave it shallow on the edges. Not only is the structure flammable, but stacking against the sidewalls places the litter where windblown rain can wet the litter and lead to spontaneous combustion.
- ***Spontaneous combustion always begins with wet litter.*** If the litter to be removed from the houses is wet, open up the barns and let them dry as much as you can. Then, later remove the litter to storage once it has dried. New litter should be stacked away from previously stored litter that is drier, and do not mix it on top. □

Understanding What Makes Tennessee Whiskey Unique

The sugar maple tree yields autumn foliage, maple syrup, and Tennessee whiskey. Wood from the tree is chopped into planks, stacked in piles and burned to form charcoal. Freshly distilled, un-aged whiskey is filtered over the charcoal in a mysterious, but necessary step known as the Lincoln County Process (LCP). By law, a product cannot be called Tennessee whiskey without it. **Researchers now say they have some clues** as to what the process imparts to the final product.

Click here for the full article □

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3 FACTOR THAT IMPACT PAW HEALTH

Chicken paws have become a lucrative commodity in the industry with millions in exports annually. Paws also serve as an indicator of animal welfare during audits and can be a direct indicator of bird performance. Footpad dermatitis (FPD), the ulcerated lesions that can form on the pad of the paw, has the power to disrupt their potential. For the sake of welfare, profitability and performance, it's important to understand the top three factors that influence paw health.

1/ Litter Moisture

High litter moisture content has been shown to be a sole contributing factor to the development of FPD, especially before two weeks and as early as 3-5 days of age, with levels greater than 30% being very detrimental. Focus on litter and moisture management year-round to help avoid FPD. Even decaked and windrowed litter can cause severe burns if excess moisture is present.

2/ Bedding material and depth

The role of bedding material is to absorb and then allow for evaporation of moisture, which can be influenced by the material's article size, moisture content and build up, and rate of caking. New bedding is often placed at inadequate depths. Research has shown a direct correlation between litter depth and FPD with paw scores improving as litter depth increased (Bilgili et al 2009). Increased litter depth leads to decreased moisture levels and improved paw quality, which positively impacts bird performance and health (Shepard et al 2017).

3/ Nutrition

Nutrition can impact the development of FPD in various ways, including affecting feces consistency and thus litter quality. For example, excess sodium can increase water intake thereby increasing litter moisture. One study that examined diets with equal protein:energy ratio with either low- or high-density levels showed broilers raised on the low-density diet had significantly fewer FPD cases than the high-density fed birds (de Jong et all 2015).

Administrator Wheeler Signs Final Rule to Add Reporting Exemption Under EPCRA for Air Emissions from Animal Waste

June 4, 2019. WASHINGTON --Today, U.S. Environmental Protection Agency (EPA) Administrator Andrew Wheeler signed a final rule amending the emergency release notification regulations under the Emergency Planning and Community Right-to-Know Act (EPCRA). The amendments clarify that reporting of air emissions from animal waste at farms is not required under EPCRA.

The final rule comes as first responders across the county have repeatedly reminded the agency that community-specific protocols are determined between local responders and animal producers well in advance of emergencies. These strong partnerships provide a platform for resolving issues when they arise without the need for a national one-size-fits-all approach.

"This final rule provides clarity and certainty to the regulated community that animal waste emissions from farms do not need to be reported under EPCRA,"**said EPA Administrator Andrew Wheeler.** "This action eliminates an onerous reporting requirement and allows emergency responders and farmers to focus on protecting the public and feeding the nation, not routine animal waste emissions."

"The goal of emergency response officials and local emergency planning committees (LEPCs) is to prepare communities for emergency threats related to hazardous chemical releases. Such emergency threats do not include 'best guess' reporting on day-to-day emissions on farms and animal operations,"**said National Association of SARA Title III Program Officials (NASTTPO) President Tim Gablehouse.**

"The focus of LEPCs should be and is on chemical hazards that present meaningful risk of harm to community members and first responders. We look forward to working on enhanced coordination and cooperation between all community members to improve preparedness for hazardous chemical releases."

The changes to emergency release reporting regulations reflect the existing relationship between EPCRA and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and provide consistency between the two environmental laws.

Background
On March 23, 2018, President Trump signed into law the Consolidated Appropriations Act, 2018 ("Omnibus Bill"). Title XI of the Omnibus Bill is entitled the "Fair Agricultural Reporting Method Act" or the "FARM Act." The FARM Act expressly exempts reporting of air emissions from animal waste (including decomposing animal waste) at a farm from CERCLA section 103. The FARM Act also provides definitions for the terms "animal waste" and "farm." Because these types of releases are exempted under CERCLA, based on the release reporting criteria under EPCRA section 304, these types of releases are also exempt under EPCRA section 304.

On October 30, 2018, then Acting Administrator Wheeler proposed the reporting exemption under EPCRA alongside National Association of SARA Title III Program Officials (NASTTPO) President Tim Gablehouse and various state animal producer trade associations.

You can read the final rule here: https://www.epa.gov/epcra/amendment-emergency-release-notification-regulations-reporting-exemption-air-emissions-animal

Today's final rule maintains consistency between the emergency release notification requirements of EPCRA and CERCLA in accordance with the statutory text and framework of EPCRA.

For more information, please see our web page at www.epa.gov/animalwaste. □

Half-beef, half-plant burger seeks the middle ground

By Susan Kelly on 5/28/2019 in Meatingplace.com

Equilibrium Foods of Kitchener-Waterloo, Ontario, said it has developed the Better Blends burger, a 50-50 combination of meat and plants intended to appeal to "mindful meat eaters."

The blended burgers have less fat, calories and cholesterol per serving than a traditional burger. They are made from beef raised without antibiotics, plus Portobello mushrooms, quinoa, lentils and non-GMO vegetables. They contain no fillers and are free from the top 10 food allergens including dairy, soy and gluten.

"Many plant-based meat alternatives are highly processed, full of salt and refined ingredients," company founder and CEO Doug Ridge said in a press release. "Better Blends meat + plant burgers help consumers reduce their consumption of meat by half, and still enjoy what they most love about meat burgers."

The company spent more than two years developing the product. "We see the rise of the flexitarian and blended products as an opportunity for Better Blends products," Ridge said. He pointed to studies that indicate meat eaters want to reduce how much meat they eat but not necessarily become vegans or vegetarians. □

How alternative proteins will challenge the industry

MAY 10, 2019 BY AUSTIN ALONZO from WATTAGNET.COM

Alternative proteins are nearly a $1 billion market. A protein markets analyst offers tips for how conventional proteins can handle the change.

Alternative proteins – plant-based and cultured meat – are gaining interest among consumers and investors, but will they pose a serious threat to the established animal protein industry?

Christine McCracken, a senior protein analyst covering North America for Rabobank's RaboResearch Food & Agribusiness imprint, discussed what role alternative proteins will play in the diet of the future as part of the 2019 Animal Agriculture Alliance Stakeholders Summit in Kansas City, Missouri. She spoke on May 9.

Plant-based proteins

Plant-based proteins, or products made from vegetables to imitate or replace meat, are hardly new, but they are gaining steam thanks to improved product variety, taste and marketing in the recent past. In the last month, two leading plant-based protein brands, Beyond Meat and Impossible Foods, won headlines thanks to a blockbuster initial public offering and test roll out of the Impossible Whopper at Burger King.

One reason, McCracken said, why the plant based proteins are getting so much attention is because the segment is actually seeing growth in a grocery market where growth is uncommon. Moreover, the products are appealing to younger consumers who seek new options and may not be as inclined to eat meat as their older cohorts.

While Beyond Meat and Impossible Foods are arguably the most well-known brands, they are far from the only companies in the plant-based segment. More and more are arriving on the market every year and many are receiving financial backing from established food and agriculture brands. These companies are interested in these products, McCracken said, because there is little growth elsewhere in packaged foods.

Cultured meat products

The other alternative protein market worth monitoring is cultured-meat – also called clean meat, lab-grown meat or cell-based meat – a protein product derived from the culturing of animal cells. Although there is much investment buzz about the product, and some proof of concept, McCracken said none of the numerous companies working on cultured meat has scaled up their production process and brought anything to market yet.

Nevertheless, cultured meat is interesting. The product does not position itself as a replacement, but rather as a compliment to conventional meat, arguing animal agriculture cannot feed a growing population on its own. She was skeptical about that argument, however, as technology persistently finds a way for farmers to produce more using less resources.

Cultured meat also runs up against regulatory issues. There is already a strong pushback on a state and federal level to keep cultured meat – and other alternative proteins – from being marketed as meat. The dairy segment, McCracken said, is already suffering from lost sales due to the proliferation of non-dairy milk products on the market.

Furthermore, cultured meat will need to overcome what she called the "ick factor" some consumers may feel and it will need to be further developed in order to merit its premium price tag. The way that it could most likely be produced in short order, as a nugget or sausage product, won't carry a premium cache.

Considerations for the future

Alternative proteins still lag far behind conventional meat products, but they are growing at a rapid pace. Right now, the alternative protein market is worth nearly a billion dollars and is growing by about 20 percent per year.

One factor may yet push alternative proteins further forward: China. The country is currently dealing with an outbreak of African swine fever (ASF) that is devastating that country's swine herd and domestic protein industry. Going forward, China may see cultured and plant-based products as a necessary way to feed the most populous nation in the world.

In the U.S., McCracken said the meat industry can respond to alternative proteins in three ways: by staying on top of trends, rethinking the meat case and the products on the market and leading on health and sustainability.

Consumer behaviors are changing and a growing number of people are interested in – or are – reducing their meat consumption for health or environmental reasons. She said companies like Tyson Foods Inc. and Cargill Inc. are investing in alternative proteins because they recognize the growing demand.

The industry is expected to enter a period of higher prices and higher demand, so now is the time to focus resources on developing new products that tell meat's positive story. Meat is high in protein, healthy and sustainably produced. The animal agriculture industry needs to own this message. Alternative protein products are highly processed and they do not have the same nutritional content as meat.

"If you look at the fat content and nutritional content on some of these plant based products it's not what you might think, it's not healthier and I think the industry has a good story there," McCracken said. "Don't give up the lead on health, I think you've got a good natural product that people want."

Note from TPA: Christine McCracken is lined up to be our keynote speaker at 1:00 on Friday, Aug. 2nd at the DoubleTree downtown Nashville for our TPA Annual Meeting. Registration is free and everyone is invited! □

Tyson sells stake in plant-based meat maker Beyond Meat

April 24, 2019 in Reuters.com

Tyson Foods Inc said on Wednesday it had sold its 6.5 percent stake in vegan burger maker Beyond Meat, as the no. 1 U.S. meat processor *looks to develop its own line of alternative protein products*.

The exit comes against the backdrop of rising tensions between the two companies after Tyson Chief Executive Officer Noel White said in February that the company would develop its own plant-based protein products, Axios reported here earlier on Wednesday, citing multiple sources.

Tyson's stake was noticeably absent in Beyond Meat's amended initial public offering filing on the list of stakeholders who own more than 5 percent.

Beyond Meat filed on Monday to raise up to $183.8 million in an IPO, seeking a valuation of up to $1.21 billion.

Based on that valuation, Tyson's stake would have been worth about $79 million. It was not immediately clear how much Tyson sold its stake for, while the Axios report said there must have been multiple buyers. ☐

Tyson's Alternative Meats Can Become `Billion-Dollar Brand'

By Deena Shanker, Lydia Mulvany, and Isis Almeida on May 15, 2019, 11:08 AM CDT in Bloomberg

While Tyson Foods Inc. is the biggest U.S. meat processor, its up-and-coming meatless protein product may steal the show.

The offering is set to debut this summer and could be a "billion-dollar brand," Chief Executive Officer Noel White said at a conference in New York Wednesday. The company hasn't said what form it will take, be it burger, sausage or meatball -- or all of the above.

Tyson sold its stake in Beyond Meat Inc. just before the latter's stunning initial public offering earlier this month. Chief Financial Officer Stewart Glendinning touted Tyson's resources, its transportation network, test kitchens, science labs and sales team. The company doesn't even need to put new capital in to make a veggie burger that competes with the likes of Beyond Meat.

"The demand for protein is growing in the world, and certainly plant offers another opportunity for consumers to enjoy a protein-rich meal," Glendinning said in an interview at the conference. "The kind of customers that will be the buyers of these products are already huge customers of the company, so we really believe we will be successful in the alternative protein space."

Tyson has registered several trademarks recently that reference plant-based meat products including Raised & Rooted, Pact and Outsmart Compromise. ☐

CFO: Tyson has edge over alternative protein startups

MAY 17, 2019 in WattAgnet.com BY ROY GRABER

By utilizing current business networks and facilities, Tyson Foods believes its plant-based protein products can quickly do well in the marketplace

Tyson Foods' entry into the alternative protein sector should be successful and bring a quick return on investment, due to advantages it has over any competing startup company, Tyson Foods Chief Financial Officer Stewart Glendinning said.

Speaking on May 15 at the BMO Capital Markets Farm to Market Conference, Glendinning, along with Tyson Foods CEO Noel White, addressed the company's plans to develop, produce and market plant-based protein products.

One edge Tyson Foods has over plant-based protein startup companies is that it does not need as much capital to get its products into commerce.

"If we were starting from the ground up, and we had nothing, we'd have to build a lot of assets," Glendinning said. "We have a transportation network; we have a refrigerated storage network, we have a sales force. "(We have) so many of the pieces. We have the test kitchens, we have the science labs and all of the things that you need to bring a new product like this to market that would otherwise require capital if you were a startup. …

"We are in a very, very powerful position to execute efficiently and effectively in the space, not to mention the fact that we already have strong brand power."

Withdrawn investment in Beyond Meat

Tyson Foods was an early investor in several alternative protein companies, including plant-based protein company Beyond Meat. However, Tyson recently exited its investment in that company to pursue its own alternative proteins venture.

"It came to the point in time that we decided we were going to enter that market ourselves, and do it in a meaningful way. Rather than competing directly with someone we have an investment in, we decided that we would exit the investment and move into that category, utilizing all the resources we have available to us," White said.

continued on next page

CFO: Tyson has edge over alternative protein startups *(continued from previous page)*

A potential 'billion-dollar brand'

With the growing popularity of plant-based proteins, and the competitive advantages Glendinning mentioned, White said Tyson's alternative protein has the potential to be a "billion-dollar brand."

"It is a growing category. Can it be a billion-dollar brand? Yeah, I think it can be in time. It's a space that we identified some time ago as an emerging category. I think it certainly has the capability of being a billion-dollar business," White said.

Executives with Sanderson Farms on the same day also spoke at the BMO Capital Markets Farm to Market Conference. ◘

Beyond Meat shares make stellar debut

By Susan Kelly on 5/3/2019 in MeatingPlace.com

Shares of Beyond Meat shot up 163% in their market debut on Thursday, notching the biggest first-day gain for a U.S. initial public offering since at least 2008, according to Bloomberg.

The maker of plant-based meat substitutes began trading at $46 and closed at $65.75, valuing the company at about $3.8 billion. The shares priced at $25 late Wednesday, after the company raised the size and target price range for the offering to 9.625 million shares at $23 to $25 each, up from the previously expected 8.75 million shares at $19 to $21 each.

In an interview with *Investor's Business Daily*, Beyond Meat Executive Chairman Seth Goldman said the company is developing products for "every meat occasion." The maker of the Beyond Burger is working on steak and bacon substitutes, he said, but those are more challenging to create and won't be available anytime soon.

Beyond Meat's net loss narrowed to $29.89 million in the year ended Dec. 31, from $30.38 million a year earlier. Net revenue more than doubled to $87.93 million in the period. ◘

200 million Americans can't be wrong: Or, the lure of the new

By Lisa M. Keefe on 4/16/2019

Two-thirds of consumers in the U.S. buy plant-based meat alternatives at the retail store, or are interested in at least trying them.

This, according to the annual benchmark survey of the retail meat market, the Power of Meat, conducted by 210 Analytics LLC for the Food Marketing Institute (FMI) and the North American Meat Institute (NAMI), and sponsored by Sealed Air Food Care. For 14 years, the POM project has done a deep dive into drivers of meat purchases, and now includes an analysis of the meat alternatives market, as well.

At $878 million, the plant-based meat alternative market is small but growing fast, spurred on, not by vegans or vegetarians, but by self-reported flexitarian diners, the report said.

Whereas self-reported vegan and vegetarian consumers combined hover around 5 percent of the population, so-called flexitarians — eating a mostly vegetarian diet with occasional helpings of meat or poultry — are growing in number, particularly among younger consumers.

Among Generation Z, 13 percent eat a flexitarian diet compared with just 6 percent of Older Boomers, pointed out Anne-Marie Roerink, principal of 210 Analytics, in a recent presentation of the data at the Annual Meat Conference in Dallas.

"To meat, or not to meat? If I had to put it in political terms, these are our swing voters, right? These are folks that are attracted by a plant-based lifestyle, but still want to include meat into their diet a little bit," Roerink said. "They are attracted to things like having great care for the environment, the person, the animals."

Where

In the way the fresh meat case or deli is preferred for meat purchases, consumers interested in plant-based alternatives were most comfortable buying them from the meat department, rather than the department selling produce (see "By the Numbers," below).

This, Roerink pointed out, is good news for the meat and alt-meat industries, both.

"Both the current buyers and the 'absolutely would be interested' respondents very much skew toward Gen Z and millennials," she said. "Those are shoppers that we are not seeing a whole lot in our meat department, so if bringing in some plant-based meat alternatives gives us a chance to then also sell them on a meat purchase, I think that might be a great way to drive these people into the department.

Still, half of the Power of Meat survey respondents said they would be willing to buy plant-based meat alternatives that, to date, have been mostly merchandised in the frozen foods section.

Speaking of flexitarians …

For carnivores who aren't ready to go all the way to plant burgers, blended burgers that combine an animal protein, usually beef, with a plant, often mushrooms, are also attracting a lot of interest: 63 percent of shoppers say they "maybe" or "definitely" would purchase blended meat and plant-based items, according to the Power of Meat research. Respondents describing themselves as "meat eaters" are more likely to say they already buy blended items and equally likely to say they would if given the opportunity.

While blended items (and plant-based alternatives) are not new to the market, they are often stocked for sale in the frozen meat section and may have gone unnoticed by many shoppers, Roerink pointed out.

Interest in both blended and plant-based meat alternatives skews toward younger shoppers — as evidenced by higher current consumption levels and greater potential interest. While baby boomers are significantly more likely to have no purchasing interest at all, blended items fare significantly better than plant-based items among these shoppers, according to Power of Meat research.

Fostering loyalty at an early age

Given that interest skews toward Gen Z and younger millennials, interest in both blended items and plant-based meat alternatives is higher in urban areas and one-person households with above-average incomes. After all, they shop for groceries just once a week or less, and tend not to stick to a routine set of meals, instead finding inspiration on social media and from online recipes. They most often buy for just one or two meals at a time, and so are not drawn to stocking up on items to freeze and use over time. They are likely to have purchased meal kits, and also to have shopped online, both for groceries and for meat/poultry.

"Meat-eaters are very much involved in the blended and the plant-based items as well," Roerink said. "A lot of research shows that when people buy a plant-based meat alternative, meat is in the basket as well."

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200 million Americans can't be wrong: Or, the lure of the new *(continued from previous page)*

Interest in blended, plant-based burgers

Would you purchase…?	Already do	Definitely would	Maybe would	Absolutely not
Blended meat/plant-based items				
All	**13%**	**23%**	**40%**	**24%**
Gen Z	24%	21%	41%	15%
Younger Millennials	19%	35%	31%	14%
Older Millennials	17%	30%	35%	18%
Gen X	12%	21%	43%	24%
Boomers	3%	14%	44%	39%
Describe diet as "meat eater"	14%	22%	41%	24%
Describe diet as "flexitarian"	8%	33%	36%	23%
Plant-based/vegetarian protein				
All	**15%**	**19%**	**31%**	**36%**
Gen Z	22%	24%	32%	23%
Younger Millennials	21%	25%	33%	20%
Older Millennials	17%	21%	34%	28%
Gen X	13%	19%	30%	38%
Boomers	9%	10%	28%	54%
Describe diet as "meat eater"	13%	18%	31%	38%
Describe diet as "flexitarian"	28%	24%	31%	17%

FFAR Announces $4M Animal Welfare Technology Research Initiative, In Partnership with McDonald's

On April 5, 2019, in Animal Welfare

The Foundation for Food and Agriculture Research (FFAR) on Tuesday announced the launch of the SMART Broiler, a research initiative offering $4 million for research supporting the development and commercialization of automated monitoring tools that quantitatively assess key animal welfare indicators in broiler chickens. FFAR is partnering with McDonald's Corporation as a cofounder on this initiative.

Click here for full article

Burger King Plans to Release Plant-Based Impossible Whopper Nationwide By End of Year

On May 3, 2019, in Plant-Based Meat

Four weeks after starting a pilot in St. Louis for the plant-based burger, Burger King announced Monday it intends "to quickly test in additional markets with the intention of nationwide distribution by the end of the year."

"The Impossible Whopper test in St. Louis went exceedingly well and as a result there are plans to extend testing into additional markets in the very near future," the company said in a statement. "Burger King restaurants in St. Louis are showing encouraging results and Impossible Whopper sales are complementing traditional Whopper purchases."

The additional test markets and timeline were not immediately available, but the plant-based Whopper developed by Silicon Valley-based Impossible Foods continues to be available at 59 Burger King restaurants in and around St. Louis.

Burger King is not alone in adding vegan and meatless options. Del Taco launched its new Beyond Taco and Beyond Avocado Taco on April 25, which includes a special Beyond Meat protein. Fast-casual pizza chains are also incorporating Beyond Meat protein as well as vegan cheese.

Not Everyone's Into Fake Meat

June 1, 2019 from the Center for Consumer Freedom's Ag Watchdog newsletter

Arby's announced last week that it will not be getting into plant-based meat alternatives—ever. McDonald's also stated that it was monitoring other companies, but didn't have any current plans to offer veggie burgers or similar products. Additionally, some investors are betting against Beyond Meat. The head of the Harrington Alpha Fund said the company's valuation is "absurd," and Citron Research believes the stock will fall once the company has to report earnings.

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A step closer to lab-produced steak

By Lisa M. Keefe on 4/16/2019 in MeatingPlace.com

So far, most of the successful development of cell-based meat has been focused on a ground beef-like product. A new technology out of Penn State and the University of Alabama, however, could be key to making lab-produced steak and other whole muscle-type products a reality.

A new technique to spin starch fibers uses Lego pieces as a non-conductive part of a small machine that uses electricity to spin pure starch fibers out of corn starch — the first such pure starch fibers available.

The machine uses electrospinning, in which electricity is applied to a starch solution as it dispenses from a nozzle. The electrical field that forms between the nozzle and a rotating collection drum draws the starch into long threads. In wet electrospinning, the drum is submerged in a bath of alcohol and water to help congeal the fibers, according to a release from the schools about the research.

The mat of starch fibers could be used as a scaffolding on which to grow animal-based protein cells in a lab. Furthermore, the spun starch fibers presumably can be aligned in order to grow aligned muscle cells as they would grow naturally in a whole muscle cut. Researchers' next step is to see if the muscle cells actually do grow on the starch mats in the formation that the scientists predict.

The research has recently been published in Food Hydrocolloids.

The researchers also are exploring ways to make starch fibers in specific patterns using 3D-printing technology, and plan to scale up their equipment to produce larger quantities of the fibers. □

Cell-based, conventional meat do not compete: Memphis Meats CEO

By Tom Johnston on 4/10/2019 in MeatingPlace.com

CARLSBAD, Calif. — The need for cell-based and conventional meat products comes down to numbers, and the numbers call for a partnership between the two industries.

"I don't see this as actually being competitive in any way," Uma Valeti, CEO and co-founder of cell-based meat company Memphis Meats, told a standing room-only crowd here at the North American Meat Institute's Meat Industry Summit. "I'm looking at the numbers."

It's going to take both cell-based meat and meat harvested from animals because the global population is projected to grow to 10 billion (from 7 billion now) by 2050 and meat demand is expected to double by then. That's a demand — which Agriculture Secretary Sonny Perdue has described in terms of having to produce the same amount of food in the next 50 years as has ever been produced in the history of civilization — that livestock alone will not be able to meet, Valeti said.

Valeti said the advantage of cell-based production, using animal cells grown in cultivators full of nutrients to grow meat, is that it removes the live animal and the resources and time it takes to grow a live animal, as well as reduces the bacterial risk associated with slaughtering live animals. And the Memphis Meats process can produce meat similar to meat from an animal in only three to six weeks, he said.

"It's not a meat alternative," Valeti said, noting that the animal cells used to grow the meat in cultivators are similar to the cells inside the animal.

The company has successfully produced beef meatballs, southern fried chicken and grilled duck and has conducted several tastings, for example.

"I haven't seen somebody who hasn't enjoyed the product," he said.

With investors such as Tyson Foods and Cargill, Memphis Meats is looking to partner with the meat industry as a supplier of inputs like the nutrients Memphis Meats uses to grow meat; as operators of large-scale production facilities; as custom product development partners; as downstream food product formulation partners; and as distributors into food service and retail channels, Valeti said.

Valeti wouldn't commit to a timeframe for when Memphis Meats would go to market with its products, explaining that the company is awaiting clarity on how the USDA and FDA will jointly regulate cell-based meat products in terms of their inspection and labeling. He said the company wants to be transparent in communicating to consumers that the product is real meat, but also in explaining how its process works and how it differs from conventional meat production.

Memphis Meats has been working to reduce the costs of producing cell-based meat. Initially, it could enter the premium market at a price range of between $20 and $50 per pound, and those prices will be reduced over the next 10 to 20 years, Valeti said. He told **Meatingplace** in an interview that the rollout would start small, something in the order of a few hundred or a few thousand pounds produced by small-sized facilities one might compare with various sized craft breweries.

Valeti had pointed out in his presentation that some 40 companies around the world, most of them outside of the United States, now are working in the cell-based meat space. Memphis Meats and the conventional meat industry have an opportunity to be at the forefront of the cell-based field together, he said. □

Generation Z Restaurant Habits Changing the Food Industry

The oldest Generation Z consumers will be 22 years old in 2019, but they already represent 10 percent of total foodservice traffic, according to The NPD Group. Gen Zs made 14.6 billion restaurant visits in 2018, and their habits are beginning to make their mark on dining out and eating trends.

"A large percentage of this generational group has been raised to put a greater emphasis on the quality of food, whether it's clean, fresh, or nutritionally beneficial, as well as its flavor and function," The NPD Group said. "Their attitudes and behaviors about the foods they consume are now being reflected across grocery shelves and cases."

Click here for full article □

Washington State Enacts Cage-Free Egg Law

Washington Gov. Jay Inslee signed a law that phases out the production and sale of eggs from caged hens, regardless of where the eggs were produced. The measure follows similar actions in California and Massachusetts, where ballot initiatives have required changes to housing requirements.

Click here for full article □

Consumer Freedom Updates

March 30, 2019 in The Ag Watchdog

YouTube Stars Quitting Veganism
Several YouTube stars have recently quit veganism, citing the strict diet's effect on their health. To no surprise, the blowback from vegans has been nasty.

Racism, Sexism Causing Animal Activist Burnout
New research finds that hostile attitudes toward women and minorities are contributing to burnout in animal rights groups. Recent scandals and resignations at animal activist groups involve HSUS CEO Wayne Pacelle, HSUS VP Paul Shapiro, Mercy for Animals executives Nathan Runkle and Nick Cooney, and Farm Animal Rights Movement founder Alex Hershaft.

Food Companies Push for Climate Change in Dietary Guidelines
The Sustainable Food Policy Alliance, a splinter group of food companies led by Danone, Nestle, and Unilever, called on Wednesday for the federal government to factor non-nutrition issues into the 2020 Dietary Guidelines. "Dietary advice should account for how climate change, water scarcity, soil health, and other environmental challenges may impact the availability and nutrient density of foods and beverages," they write.

Fake Meat Promoter Calls for Activist-Industry Alliance
Bruce Friedrich writes in an op-ed for Food Navigator that activists should seek to ally with food companies to promote plant-based meat alternatives and cell-cultured meat. This is quite a change from Friedrich's many years as a PETA executive, when he said such things as, "I think it would be great if all of the fast-food outlets, slaughterhouses, these laboratories, and the banks that fund them exploded tomorrow." (See our profile on Friedrich at ActivistFacts.com.)

Will California, New York legislate what people can wear?
Bills in these two states would ban the sale of natural fur—the latest front in a larger agenda to impose a vegan lifestyle on the public. Read more here. □

April 6, 2019 from Ag Watchdog

Ag Watchdog is a newsletter highlighting activist threats to agriculture. Ag Watchdog is assembled by the Center for Consumer Freedom, which has a 20-year history of working with agriculture and exposing radical activist groups. CCF projects include HumaneWatch.org.

Los Angeles May Be Ground Zero for Animal Rights
The Nonhuman Rights Projects, which has been suing primate owners and the Bronx Zoo in an attempt to have a court declare animals to be legally "people"—thus enabling them to be plaintiffs—announced it is starting a lobbying campaign in California. The group drew praise from L.A. city councilman Paul Koretz, who is an animal rights activist. Koretz pushed the city's ban on fur and also has introduced an ordinance to force venues such as movie theaters to offer vegan protein options.

Burger King Testing Meatless Whopper
Burger King is testing a beef-free Whopper made with the plant-based Impossible Burger. The chain is initially offering the beef-free burger at locations in the St. Louis area. In related news this week, Nestlé is releasing a plant burger in Europe.

Beyond Meat Sued for Fraud
In an amended complaint to a lawsuit it filed in 2017, Don Lee Farms, which manufactures plant burgers, is accusing Beyond Meat of fraud and doctoring an audit. The company also alleges it raised issues about food safety with Beyond Meat before the startup dropped its contract with Don Lee. □

Operational opportunities for poultry processing

April 11, 2019 by Joel Crews in MeatPoultry.com

While automation is playing a more prominent role in poultry processing, certain production steps will always require the input of humans.

In response to the labor shortage that is plaguing the meat and poultry industry, equipment suppliers are doing their part to address the problem by developing technology to fill the growing void of line workers. For the poultry processing sector, the challenge facing the operators of many large-scale plants is efficiently and consistently cutting up and deboning millions of carcasses each day. Automation is playing a much bigger part in this process, but the role of people working on deboning lines will likely never be completely replaced, according to most industry veterans. Maximizing yields and limiting wasted product from each carcass as a step to producing more profitable value-added products is the Holy Grail.

On most manual poultry deboning lines, workers typically use straight knives, manual scissors or a combination of both. Line workers are assigned to debone a specific poultry part, which can include breasts, thighs or legs. Breast meat is traditionally removed directly from the carcass while it is on the cone line. After the breast meat is removed and usually while the carcass is still on the cone, tender pullers remove the tenders from the breast bone. Depending on the type of product, other meat cuts are deboned on a stationary, flat or tilted cutting surface. Dark meat, including legs, is often deboned using a Whizzard, automatic handheld knife and a specialized conveyor belt.

When comparing input weights with finished weights, yields of skinless thighs average approximately 65 percent, depending on the skill and experience of the line workers. Rates also depend on the type of product being produced and if workers are incentivized to achieve yield targets. In most cases, minimizing the toll taken on line workers stationed on deboning lines for many hours every day is one of the most cost-effective ways to maximize throughput while stemming rising employee turnover.

Setting the tone

John Flood, a food industry executive who retired in 2017 as vice president and general manager of prepared foods with Wayne Farms, Oakwood, Georgia, understands the challenges the meat and poultry processing industry face each day. Flood founded Elevate in 2018 and is now a business performance expert. He consults with business executives and their teams to assess and put processes in place that allow executive teams to focus on what's important. He and his partner, Morris Pickens, Ph.D., place special emphasis on developing talent at the executive level that trickle down throughout organizations. One of the more daunting challenges he knows all too well is recruiting, hiring, and retaining workers, especially when it comes to filling positions on the processing floor. With his 38 years in the meat processing industry, he notes the process of deboning in poultry processing plants, as with any upstream meat processor, sets the tone for the raw product that is used downstream in further processing, where the impact of what is harvested from the carcass is magnified. Just as in further processing, there is still plenty of room for upstream improvement in poultry processing operations to reduce the unintended consequences inconsistency brings, including bone and foreign material elimination, Flood says.

The product that is harvested during the process of deboning "has to be the benchmark," he says, because for many processors it is at that point "when you start adding value." That value can be enhanced downstream through reduction in downtime, increasing first-quality finished goods that will result in higher customer satisfaction and ultimately, direct P&L benefits. Beyond maximizing yields and limiting waste, says Flood, "Food safety and bone elimination is critically important to the poultry industry." Too often though, "there is a disconnect upstream, including on the boning lines, to what is being received downstream and the implications that can result."

In general, Flood says, there is risk when poultry processing companies view fresh processing and the associated further processing as separate cost-and-profit centers, without a clear understanding and allocation of associated, often unintended, cost impacts. He says, "There are things you can do to prop up your profits on the fresh side of the business, including deboning, that will be more than offset and lost downstream when you get into the further processed side of the business. A lot of companies though are not aggressive in addressing this and aren't holding the two groups jointly responsible in working together to fix an issue upstream." At Wayne Farms this was an area of emphasis to balance and understand, knowing that what gets measured gets done, and in the end, the full corporate P&L would benefit.

As an example, investing in and adding a penny to the raw product cost might be offset by a savings of 1.5 cents on the back side, says Flood. And those half pennies and tenths of pennies that are worth millions of dollars to companies, when only looked at through one lens can be misleading because they often only tell half of the story and can hide opportunities for improvement.

The human touch

He points out that a lot of the challenges poultry processors face on the operations side of the deboning process cannot be fixed with capital alone and many of the issues are directly related to labor. Industry statistics on turnover in the poultry industry are startling. "When you've got companies that have anywhere from 40 percent up to 110 percent turnover of their employees it is impossible for them to do a great job consistently," Flood says. "They're in a constant frenzy of training and replacing workers and it is a huge issue."

continued on next page

Operational opportunities for poultry processing *(continued from previous page)*

While turnover is a necessary evil in the meat and poultry industry, processors that accept it as the norm, without looking for additional, off the processing line contributors to employee dissatisfaction are doing themselves a disservice. In many cases, employees will suggest solutions "if they are asked" for feedback. Often, shifting capital to add or enhance amenities in the name of employee welfare is a cost-effective way of making a demanding, repetitive job more bearable. According to Flood, something as simple as minor improvements to break rooms or locker rooms can go far toward improving retention. "The line is already hard work, why would you want to make it even harder and more miserable by not providing these employees a comfortable environment in their locker rooms, bathrooms and break rooms?" he says. When it comes to poultry deboning, "It's not an easy job," Flood says, "and it's something companies wrestle with all of the time. There's very little they can do to make that a glamorous job."

During Flood's time at Wayne Farms, providing workers with free Wi-Fi in the break area was one example of how management delivered on something hourly workers said would be a nice perk to allow them to maintain contact with family and friends or access the internet before and after shifts. These types of amenities are often taken for granted by office workers. Previously, for line workers, "There was limited access to the outside world," Flood says. With these types of investments, he says, those workers might think, "'Well, this is a hard job, but I can tell this company cares about me.'"

Spending sense

As plant operators become ensconced in all of the data monitoring and measuring of productivity, efficiencies on the line and throughput, the natural reaction is to funnel all the capital spending to improve operations out in the plant.

However, "with a little bit of capital in those break rooms and other employee areas, all of a sudden you can impact what is happening out on the plant. If you improve the efficiency of your employees, you may not need to spend a lot of money out in the plant because you have a labor force that knows what they're doing, you've got lower turnover and you're going to get better results." □

Tyson: Pending BRF deal would offer access to big market

ON MAY 6, 2019 BY ROY GRABER in WATTAGNET.COM

Further processing facilities in UK and Netherlands give Tyson Foods entry into Europe

As Tyson Foods prepares to close on its acquisition of BRF's facilities in Thailand and Europe, the company looks forward to gaining more access to the Asian and European markets.

Tyson in February announced its intent to acquire four processing facilities in Thailand, one in the Netherlands and one in the United Kingdom. Speaking during a conference call with reporters on May 6, Tyson Foods' CEO said he expects that planned transaction to close within the third quarter of the 2019 fiscal year, which began at the end of March.

Tyson's 2018 acquisition of Keystone Foods already gave the company an expanded presence in Asia and Australia, and the addition of the BRF assets in Thailand will further grow that presence. However, the new facilities in Europe will give it an entry into that continent's poultry industry as well.

Both European plants are further processing plants, so no new live operations will be added in the Netherlands or the U.K., White explained.

"We look at our international platform from both a supply standpoint as well as demand standpoint," said White. "Thailand, Southeast Asia, historically has been a low-cost, high-quality supply platform for Europe as well as other countries, so we would plan to ship (the raw material) from Thailand to the U.K. and the Netherlands, and further manufacture those products. So it does get us, from a demand standpoint, an entry into obviously a very large market."

Tyson Foods earlier stated that it would acquire the BRF assets for US $340 million.

BRF, which is headquartered in Brazil, has posted disappointing financial results in recent years. It announced in 2018 that it would divest of its operations in Thailand, Europe and Argentina and focus on more profitable markets.

BRF had earlier announced deals to sell its Argentinian pork business, Campo Austral; its Argentinian poultry business, Avex; and Quickfood, another Argentina-based company that processes beef patties, wieners, cold cuts and frozen vegetables. □

Tyson Foods Completes Acquisition of Thai and European Businesses from BRF S.A.

Springdale, Ark. – June 3, 2019 - Tyson Foods, Inc. announced the successful completion of the acquisition of the Thai and European businesses from BRF S.A. The purchase includes four production facilities in Thailand, and one each in the Netherlands and the United Kingdom. These businesses build on the company's growth strategy to expand offerings of value-added protein in global markets.

Click here for full article □

Tyson Foods Invest in Food Safety Testing Firm Clear Labs

Tyson Ventures has already made splashes buying stakes in alternative protein companies. Now, the venture capital arm of giant Tyson Foods Inc. is betting the meat industry will beef up its food-safety platforms. The unit is investing in Clear Labs Inc., a food safety testing company that uses a robotic platform to detect pathogens like salmonella. The technology shortens turnaround times of current methods to 24 hours from three-to-five days. It's Tyson's first investment in the food-safety space, and likely not the last, said Reese Schroeder, managing director at Tyson Ventures.

Click here for full article ◻

Poultry collusion suit and things that make you go hmmm

APRIL 3, 2019 OP ED BY ROY GRABER IN WATTAGNET.COM

Kraft Heinz, Conagra Brands, Nestle and Pinnacle Foods file suit against group of broiler companies and Agri Stats

Another lawsuit has been filed that accuses many of the Top Poultry Companies in the United States of conspiring in an effort to raise the price of chicken.

Among the companies targeted in a new lawsuit filed in a federal court in Chicago are: Tyson Foods, Pilgrim's Pride, Sanderson Farms, Koch Foods, Mountaire, Wayne Farms, House of Raeford, Mar-Jac Holdings, Perdue Farms, Fieldale Farms, George's, Simmons Foods, O.K. Foods, Harrison Poultry, Foster Farms, Claxton Poultry and Agri Stats.

Enough of these suits -- all of which I consider frivolous -- have been filed that it hardly seems interesting anymore when a new one is filed. But when I saw the list of companies that are plaintiffs in the latest suit, it caught my attention. To borrow the title of a song from the early 1990s, this suit offers plenty of "Things that Make You Go Hmmm."

Four of the plaintiff companies listed in the lawsuit, according to a Chicago Tribune report, are: Kraft Heinz, Nestle, Conagra Brands, and Pinnacle Foods, which is a subsidiary of Conagra.

All four are diversified food companies that source chicken for some of their products. But one is also one of the nation's top turkey companies, and another is a former broiler producer.

I don't mean to insinuate anything such as ulterior motives for taking part in this lawsuit, but here are a few details about some of the plaintiffs that I find curious:

- Kraft Heinz is the parent company of Oscar Mayer and is the sixth largest turkey company in the United States. According to the WATT PoultryUSA Top Turkey Companies survey, several of the defendants are also top turkey companies: Tyson Foods is ranked fifth, Perdue is ranked 7th and Foster Farms is ranked 11th.
- Conagra is a former broiler producer. The company's chicken division was acquired by Pilgrim's Pride in 2004.
- The CEO of Con-Agra, Sean Connolly, is the former CEO of Hillshire Brands. When Tyson Foods finalized its acquisition of Hillshire Brands in 2014, it was announced that Connolly had "chosen to pursue other interests, but will consult during the integration process." He was named to the leadership post with Conagra in early 2015.
- Hillshire Brands had made an offer to acquire Pinnacle Foods, but that proposed transaction was halted with Tyson's acquisition of Hillshire. Pinnacle became a subsidiary of Conagra in 2018.
- Allen Harim's new poultry plant and headquarters in Millsboro, Delaware, is a former Vlasic pickle plant that purchased from Pinnacle Foods. Allen Harim, which processes less chicken than all of the defendant companies except for Harrison Poultry, is not listed in the lawsuit.
- Nestle USA in 2017 has pledged to source only chicken from broilers raised according to Global Animal Partnership (GAP) criteria by 2024. At this point, very few of the companies listed as defendants have agreed to raise GAP-certified chicken.

How this lawsuit will play out of course remains to be seen, but it appears to me that these companies that have filed the suit should have known better. Do you agree?

Roy Graber is a staff reporter at WATT Global Media. Contact Graber via email at rgraber@wattglobal.com. ◻

Walmart files suit claiming poultry industry collusion

ON MAY 29, 2019 from WATTAGNET.COM

Walmart is the latest company to file a lawsuit against some of the country's top poultry companies, claiming that the broiler industry conspired to drive up the price of chicken.

In its suit, filed in the Western District of Arkansas, the nation's largest retailer alleged that certain poultry companies conspired to raise prices by sharing proprietary data and curtailing the supply over the period from 2008 to 2016.

The lawsuit's claims are similar to those of other suits that have been filed against leading poultry companies.

However, one significant difference is some of the companies that were sued in lawsuits alleging poultry industry collusion were absent from the latest piece of litigation.

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Walmart files suit claiming poultry industry collusion *continued from previous page*

The defendant poultry companies in the lawsuit include Pilgrim's Pride, Koch Foods, Sanderson Farms, House of Raeford Farms, Mar-Jac Poultry, Perdue Farms, Wayne Farms, O.K. Foods, Peco Foods, Harrison Poultry, Foster Farms, Claxton Poultry, Mountaire Farms, Amick Farms and Case Foods. Agri Stats is also listed as a defendant.

However, Walmart, which is headquartered in Arkansas, did not include Tyson Foods, Simmons Foods or George's in its lawsuit. All three companies are also based in Arkansas. Tyson's and George's headquarters are in Springdale, while Simmons' headquarters are in Siloam Springs.

Not all Arkansas companies, however, were immune to the lawsuit. O.K. Foods, the U.S. subsidiary of Mexican company Bachoco, is headquartered in Fort Smith, Arkansas.

A report from the U.S. Securities and Exchange Commission (SEC), revealed that Walmart accounts for more than 17 percent of Tyson's consolidated sales over the past three fiscal years, reported the Arkansas Democrat Gazette.

Other companies to file lawsuits alleging poultry industry collusion include Darden Restaurants, B.J.'s Wholesale Club, Kroger, Albertsons Companies, Hy-Vee, Kraft Heinz, Conagra Brands, Nestle and Pinnacle Foods.

Fieldale Farms had been targeted in an earlier lawsuit and decided to reach a settlement. The settlement was not an admission of guilt, but rather a means for the business to no longer be distracted with the litigation. ◻

Beware of animal activists posing as feed salesmen

ON MAY 10, 2019 IN WATTAGNET.COM BY ROY GRABER

AFIMAC Global senior vice president cautions if an unfamiliar person comes to your farm and identifies himself as a feed company representative, do some research

If an unfamiliar person enters your farm and claims to be a feed company salesman, you would be wise to investigate if he is being truthful.

According to Jim Rovers, senior vice president of AFIMAC Global, a new tactic of animal rights activists is to enter a farm and identify themselves as a new representative for a feed company. They do that in an effort to become familiar with farm operations and the people involved with the intent of doing things that the operator would not approve of, such as damaging property, turning farm animals loose or shooting video footage with the intent of painting the farm in an unfavorable light.

"We've had some feed sales people that show up, and they're not feed sales people. They enter your barns, they do different things," Rovers said May 9 at the Animal Agriculture Alliance Stakeholders Summit in Kansas City, Missouri.

Rovers, whose company helps agricultural operations with crisis plans that include dealing with activists, advised those attending the summit that if they do have a case of someone introducing themselves as a new feed company representative, and they have not been earlier notified that a new sales representative has been hired, contact the feed company mentioned and start asking questions.

Rovers, along with Sophie Cranley, AFIMAC Global risk mitigation specialist, spoke at the summit session, "Protecting our Plates: Are You a Target for Activists?" about current trends in activism, security considerations and activist tactics. Rovers and Cranley are based out of Canada. ◻

Animal Activism Could Cost Almost 25% of Meat Industry in Australia

June 1, 2019 from the Center for Consumer Freedom's Ag Watchdog newsletter

A recent economic study **predicted** Australia's $15 billion meat industry could lose one-quarter of its value by 2030—mostly due to animal activism. Australia has recently seen a surge in "direct actions" whereby vegan activists harass farmers, similar to tactics promulgated in the US by Direct Action Everywhere. The government is considering **increasing penalties** for such crimes. ◻

Activists Spent $200k on Anti-McDonald's Ads

June 1, 2019 from the Center for Consumer Freedom's Ag Watchdog newsletter

In advance of the McDonald's shareholder meeting in May, animal activists spent $200,000 on ads featuring Hollywood celebs demanding the company change its chicken sourcing. However, McDonald's indicated it is sticking with its Chicken Sustainability Advisory Council, which includes suppliers and animal welfare experts. Corporate pressure campaigns are being funded by the wealthy Open Philanthropy Project—**read our profile here**. ◻

Visit our website at www.tnpoultry.org
Like us on Facebook and Twitter (@tnpoultry)

U.S. Poultry Industry Creates 302,515 New Jobs, Economic Output Up 11 Percent in Two Years

Updated study quantifies the economic impact of the poultry industry in the United States

Tucker, Ga., April 3, 2019 – The U.S. Poultry & Egg Association (USPOULTRY), National Chicken Council, National Turkey Federation and United Egg Producers have released an updated economic impact study that highlights the positive impact the poultry industry has on jobs, wages, and federal and state revenue in the United States. A dynamic and integral part of the national economy, the U.S. poultry industry provides 1,984,784 jobs, $108.9 billion in wages, $495.1 billion in economic activity and $38.5 billion in government revenue. Since the last study conducted in 2016, the poultry industry has created 302,515 additional jobs, and the economic impact has increased by 11 percent.

The study breaks down poultry into three subcategories: chicken, turkey and eggs. Key economic data from each are as follows:

- The chicken industry provides 1,393,739 jobs, $76.5 billion in wages, $347 billion in economic activity and $27 billion in government revenue.
- The turkey industry provides 440,739 jobs, $24.1 billion in wages, $109.5 billion in economic activity and $8.5 billion in government revenue.
- The egg industry provides 112,470 jobs, $6.3 billion in wages, $29.2 billion in economic activity and $2.3 billion in government revenue.

"We are pleased to continue providing this valuable tool across the industry that shows the positive economic impact the poultry industry has on our nation and communities," said John Starkey, president of USPOULTRY.

The data is hosted on interactive websites that can be viewed collectively or by individual product, and then sorted nationally by state, congressional district, state house district or state senate district, and county. For more information about the U.S. poultry industry's economic impact, visit:

www.poultryfeedsamerica.org
www.chickenfeedsamerica.org
www.turkeyfeedsamerica.org
www.eggsfeedamerica.org

The economic impact study was funded by USPOULTRY. The study was conducted by John Dunham & Associates, based in New York City. The study was updated using the most current methodology available and uses data from 2018. For more information on the study's methodology and model description, please click here. □

USPOULTRY Provides Online Training Courses on Gait Scoring Essentials for Broilers

USPOULTRY is introducing two new online training program modules, "Gait Scoring Essentials for Broilers" and "Gait Scoring Essentials for Turkeys." These modules are in addition to the growing catalog of on-demand training resources available in USPOULTRY's Learning Management System (LMS).

Click here for full article □

Report Claims Link Between Corn Production, Ammonia Emissions and Deaths

WHAT?!?!?

April 18, 2019 in UEP's Newsletter

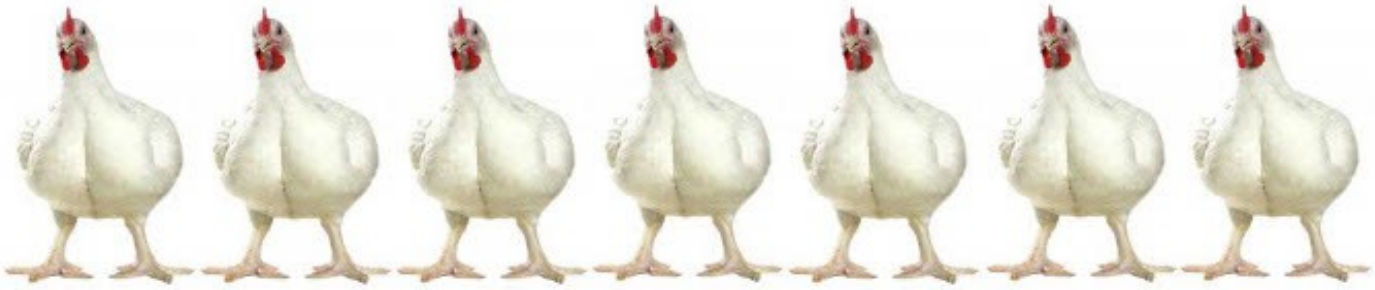
A study, "Air-quality-related health damages of maize," led by a University of Minnesota researcher, was published this month in the journal *Nature.* The study found that U.S. corn "production is associated with 4,300 premature deaths annually, with estimated damages in monetary terms of $39 billion." The study suggests these deaths and costs could be avoided through "strategic interventions" including "changing the fertilizer type and application method, improving nitrogen use efficiency, switching to crops requiring less fertilizer, and geographically relocating production."

The report's estimated deaths due to corn production and fertilizer emissions of ammonia rely on a highly questionable assumption that human health problems are caused by fine particulate matter (PM2.5) formed in the atmosphere when ammonia, volatilized after manure or nitrogen fertilizer applications, combines with other substances. UEP and other organizations in animal agriculture have long questioned this assumed linkage between ammonia emissions, PM2.5 formation, and human health.

The National Institutes of Health database of toxicology studies has a long record of peer-reviewed investigations of the effects of direct inhalation of ammonia forms of PM2.5 on people. Those studies overwhelmingly show that there are no, or at best minimal, human health consequences.

Press coverage on the study has been limited but *National Public Radio* published "Growing Corn Is A Major Contributor To Air Pollution, Study Finds." UEP will continue to work with others in animal agriculture, and now corn producers, to respond to this report. □

MIDDLE TENNESSEE JUNIOR BROILER PROGRAM



What is it?

This is a program to expose youth (grades 4th-12th) in middle Tennessee to management, selection, and exhibition of commercial broiler chickens and further foster knowledge of poultry science and the poultry industry

When is it?

The program will begin on August 20, 2019 and culminate in a broiler show, auction, and skill-a-thon on October 17, 2019

Where is it?

All required meetings and chick pickup will happen on the MTSU campus in Murfreesboro; show and auction will happen in Shelbyville, TN

For additional information and to download an entry form, visit
www.mtsu.edu/agriculture/JuniorBroilerProgram.php

ENTRY DEADLINE: FRIDAY, JULY 26, 2019

*****LIMITED TO THE FIRST 100 ENTRIES*****

Questions? Contact Dr. Kevin Downs, kevin.downs@mtsu.edu

Tyson

Sponsored by
Tyson Foods – Shelbyville
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SCHOOL OF AGRICULTURE

2017 Census of Agriculture Data Now Available

April 11, 2019 – The U.S. Department of Agriculture (USDA) today announced the results of the 2017 Census of Agriculture, spanning some 6.4 million new points of information about America's farms and ranches and those who operate them, including new data about on-farm decision making, down to the county level. Information collected by USDA's National Agricultural Statistics Service (NASS) directly from farmers and ranchers tells us both farm numbers and land in farms have ongoing small percentage declines since the last Census in 2012. At the same time, there continue to be more of the largest and smallest operations and fewer middle-sized farms. The average age of all farmers and ranchers continues to rise.

"We are pleased to deliver Census of Agriculture results to America, and especially to the farmers and ranchers who participated," said U.S. Secretary of Agriculture Sonny Perdue. "We can all use the Census to tell the tremendous story of U.S. agriculture and how it is changing. As a data-driven organization, we are eager to dig in to this wealth of information to advance our goals of supporting farmers and ranchers, facilitating rural prosperity, and strengthening stewardship of private lands efficiently, effectively, and with integrity."

"The Census shows new data that can be compared to previous censuses for insights into agricultural trends and changes down to the county level," said NASS Administrator Hubert Hamer. "While the current picture shows a consistent trend in the structure of U.S. agriculture, there are some ups and downs since the last Census as well as first-time data on topics such as military status and on-farm decision making. To make it easier to delve into the data, we are pleased to make the results available in many online formats including a new data query interface, as well as traditional data tables."

Census data provide valuable insights into demographics, economics, land and activities on U.S. farms and ranches.

Some key highlights include:

- There are 2.04 million farms and ranches (down 3.2 percent from 2012) with an average size of 441 acres (up 1.6 percent) on 900 million acres (down 1.6 percent).
- The 273,000 smallest (1-9 acres) farms make up 0.1 percent of all farmland while the 85,127 largest (2,000 or more acres) farms make up 58 percent of farmland.
- Just 105,453 farms produced 75 percent of all sales in 2017, down from 119,908 in 2012.
- Of the 2.04 million farms and ranches, the 76,865 making $1 million or more in 2017 represent just over 2/3 of the $389 billion in total value of production while the 1.56 million operations making under $50,000 represent just 2.9 percent.
- Farm expenses are $326 billion with feed, livestock purchased, hired labor, fertilizer and cash rents topping the list of farm expenses in 2017.
- Average farm income is $43,053. A total of 43.6 percent of farms had positive net cash farm income in 2017.
- Ninety-six percent of farms and ranches are family owned.
- Farms with Internet access rose from 69.6 percent in 2012 to 75.4 percent in 2017.
- A total of 133,176 farms and ranches use renewable energy producing systems, more than double the 57,299 in 2012.
- In 2017, 130,056 farms sold directly to consumers, with sales of $2.8 billion.
- Sales to retail outlets, institutions and food hubs by 28,958 operations are valued at $9 billion.

For the 2017 Census of Agriculture, NASS changed the demographic questions to better represent the roles of all persons involved in on-farm decision making. As a result, in 2017 the number of producers is up by nearly seven percent to 3.4 million, because more farms reported multiple producers. Most of these newly identified producers are female. While the number of male producers fell 1.7 percent to 2.17 million from 2012 to 2017, the number of female producers increased by nearly 27 percent to 1.23 million. This change underscores the effectiveness of the questionnaire changes.

Other demographic highlights include:

- The average age of all producers is 57.5, up 1.2 years from 2012.
- The number of producers who have served in the military is 370,619, or 11 percent of all. They are older than the average at 67.9.
- There are 321,261 young producers age 35 or less on 240,141 farms. Farms with young producers making decisions tend to be larger than average in both acres and sales.
- More than any other age group, young producers make decisions regarding livestock, though the difference is slight.
- One in four producers is a beginning farmer with 10 or fewer years of experience and an average age of 46.3. Farms with new or beginning producers making decisions tend to be smaller than average in both acres and value of production.
- Thirty-six percent of all producers are female and 56 percent of all farms have at least one female decision maker. Farms with female producers making decisions tend to be smaller than average in both acres and value of production.
- Female producers are most heavily engaged in the day-to-day decisions along with record keeping and financial management.

Results are available in many online formats including video presentations, a new data query interface, maps, and traditional data tables. To address questions about the 2017 Census of Agriculture data, NASS (hosted) a live Twitter chat (@usda_nass) Ask the Census Experts #StatChat on Friday, April 12 at 1 p.m. ET. All information is available at www.nass.usda.gov/AgCensus.

continued on next page

2017 Census of Agriculture Data Now Available *(continued from previous page)*

The Census tells the story of American agriculture and is an important part of our history. First conducted in 1840 in conjunction with the decennial Census, the Census of Agriculture accounts for all U.S. farms and ranches and the people who operate them. After 1920, the Census happened every four to five years. By 1982, it was regularly conducted once every five years. Today, NASS sends questionnaires to nearly 3 million potential U.S. farms and ranches. Nearly 25 percent of those who responded did so online. Conducted since 1997 by USDA NASS – the federal statistical agency responsible for producing official data about U.S. agriculture – it remains the only source of comprehensive agricultural data for every state and county in the nation and is invaluable for planning the future. ◘

Jerry Gulke: Prices Blow Through Overhead Resistance; What's Next?

May 31, 2019 Jerry Gulke Weekend Market Report © Farm Journal at AgWebb.com by Sara Schafer

The grain markets are on a roll. December corn was up 24¢ and November soybeans were up around 48¢. July wheat jumped 13¢ for the week ending May 31. This is the third week of higher weekly closes.

The weather market continues, as planting progress creeps forward across the U.S. As of May 26, only 58% of the country's estimated 92.8 million corn acres have been planted. The five-year average for this notch on the calendar is 90%. Soybean planting is only at 29% complete on the U.S.'s 84.6 million acres planted. The five-year average for late May is 66% planted.

"Weather markets can last four to six weeks," says Jerry Gulke, president of the Gulke Group. "In my opinion, we started the weather market about a week before President Trump made the tweet about increasing tariffs to China. We broke down, turned around had that key reversal higher and closed back above some of the resistance—and off we went."

Several weather forecasters have been calling for drier weather toward the end of May and beginning of June, Gulke says.

"And here we are, I've got three or four days of sunshine ahead," he says. "Give me three days of sunshine here and in parts of Illinois with wind, and we'll dry the ground out and we'll be back into plant. We're probably won't be planting in ideal conditions, but $4.50 corn on the Chicago Board of Trade makes it worth it."

When planting conditions are conducive, Gulke says, the first acres will go to corn. "It may be beans that end up being unable to be planted," he says.

Gulke says the weather market is likely starting to fizzle. "In about another week, we'll have probably exhausted this," he says. "This could be the beginning of an exhaustion phase in these markets based on how they closed on Friday. We'll see what happens on Monday and the weather forecast."

The good news is the dynamics of the markets have shifted.

"We've done some significant things to the corn market," Gulke says. "Corn closing above the highest level it has had in multiple years tells you the dynamics in agriculture have changed. We blew through a $4 corn like it wasn't even there. You can't help but think that maybe $4 is a support for quite some time to come, or a new dynamic takes precedence."

The mood of the market is dramatically different from the low volatility seen for the last several months. "Who would have thought a year ago that we'd be talking about these prices? But weather is a fickle friend sometimes," Gulke says. ◘

New research indicates that public opinion influences broiler prices

April22, 2019 in The Poultry Site

Researchers exploring the fluctuations of broiler prices during avian influenza outbreaks demonstrated that public opinion has a bigger influence on broiler prices than the disease outbreak alone.

The study, published in the journal *Sustainability*, explores the role that diseases like avian influenza plays in the global broiler market. When researching this topic, the scientists tracked outbreaks of avian influenza as well as search engine metadata in order to gauge public opinion over the course of the outbreak – all while measuring broiler prices. The models the researchers created indicated that public opinion, not avian influenza outbreaks alone, directly impacts broiler prices.

The study used longitudinal data from China spanning from November 2004 to November 2017. The researchers concluded that outbreaks of avian influenza in broilers or in humans did not have a significant impact on broiler price. The data from the models indicated that on average, public opinion had a larger negative impact on broiler price in local and regional markets.

This research highlights the importance of studying public opinion when considering the stability of livestock commodity prices. This research also indicates that when facing a global epidemic of zoonotic diseases, media outlets and state authorities have the potential to become "opinion leaders" and could possibly mitigate negative public opinions during the outbreak. The findings of this report also have implications for agricultural insurance markets. Accounting for public opinion as it relates to epidemic animal diseases could change how companies make their forecasts, or what products they decide to market and when.

The full research paper can be read here. ◘

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Gary Sadler (225) 531-2461

D & F Equipment
Greg Cagle
(256) 528-7842

Darling Ingredients
Terry Paschall
(731) 599-4816

DS Smith
Jeff Cormier (443) 523-4925
Russ Williams (678) 283-4928

Diamond V
James McGinnis
870-822-9752

ECM
Luke Beegle
(814) 931-9911

Ecodrum Composters
Byron Irwin (701) 446-6139
Jake Smith (870) 680-7382

Elanco
Jesse Rodriguez
(256) 506-2623

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

Farmer Automatic of America
David Leavell
(912) 681-2763

Farmers Poultry Supply
Andy Ratliff
(256) 734-5485

First Financial Bank
Allen Ginn
(770) 531-4343

Georgia Poultry Equipment
Mike Sears
(479) 435-4255

Goggin Warehousing
Keith Bellenfant
(931) 225-1206

GrassWorx
Erin Wagner
(314) 705-1520

Innovative Insulation
Perry Faulk
800-825-0123

International Paper
Russ Bratton
(731) 501-9164

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

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

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

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

TPA GREATLY APPRECIATES OUR ALLIED MEMBERS

Kemin Animal Nutrition and Health Shane Guy (270) 201-4277	**Silver Bullet Water Treatment** Ashley Williams (479) 715--9864
Lhoist NA Barry Collins (931) 368-9057	**Silvercote** Jordan Helms (864) 315-7225
LiphaTech Ryan Haley (501) 691-3182	**Smith Creek, Inc.** Jeff Roll (812) 431-1579
Live Oak Bank Michael Imming (910) 499-4687	**Southwestern Sales Co.** Ricky Gaines (479) 366-2023
Lubing John Hawk (423) 709-1104	**Sunbelt Rentals, Inc.** Bart Smith (205) 602-2485
Marel, Inc. Don Stone (479) 857-8180	**Suncoast Pine Shavings** Chynette Todd (850) 323-1414
Merck Animal Health Paul Burke (615) 805-3564	**Swallows Insurance Agency** Gabe Colwell or Greg McDonald (931) 526-4025
Meyn America, LLC Eric Nolten (770) 316-0056	**TN Farm Bureau Federation** www.tnfarmbureau.com (931) 388-7872
Motion Industries Keith Sandlin (256) 366-0912	**Tennessee Farmers Co-op** Ryan King (931) 981-2053
Nutra Blend Randy Holliman (615) 218-1420	**Thompson Gas** Robby McKim (706) 455-8426 James Watson (706) 851-4378
Plum Creek Manufacturing Ken Nolt (717) 278-8041	**TriGreen Equipment** Dorman Grace (205) 522-2606
POSS Design Unlimited Mark Ridge (614) 738-8042	**UT - Extension** Robert Burns (865) 974-7112
Prime Equipment Group Jody Howell (770) 530-1895	**Valco** Brian Phillips (601) 850-3844
QC Supply Chris Nelson (270) 733-4900	**Viand Group** Maggie Smith (931) 607-4176
Quality Incentive Company Peter Krstovic (404) 431-0792	**Vincit Group** Eric Killen (423) 504-1974
Rabo AgriFinance Kurt Baggett (731) 225-9216	**W. W. Williams** Josh Ellis (478) 235-5657
Reliable Poultry Kendall Proctor (479) 601-2676	**Weeden Environments** Kevin Weeden (716) 534-0409
River Valley AgCredit Eric Smith (423) 745-0323	**Westan Insurance Group** Portis Tanner (731) 885-5453
River Valley Ingredients Richard Stewart (770) 886-2250	**Zoetis** George Perigo (706) 669-9847

Getting to Know your TPA Board of Directors

David Wilds, President

Hometown: Knoxville, TN; originally from Parrottsville, TN

Professional: Complex Manager with Koch Foods in Morristown, TN for the past 15 years. Been with Koch for a total of 18 years previously serving as Broiler Service Tech, Hatchery Manager, Debone Supervisor, Processing Supervisor, Shift Manager, Debone Manager and Plant Manager

Family: Married to Jessica, Children - Ella (16), Lily (14) & Edie (12)

Education: BS in Agriculture from UT Knoxville

Community Involvement: St. John's Cathedral - Chapter Member

Hobbies: Hiking, mountain biking, camping, running

Main activity outside work: Going to my daughters' soccer games and backpacking/camping with my daughters' venturing crew.

Interesting facts: I was raised on a dairy and beef cattle farm but never had chickens!!

Andrew Blair, Vice President

Hometown: Shelbyville, TN; originally from Millers Creek, NC

Professional: Tyson Foods Shelbyville, TN Complex Manager for the past 5 years, previously Plant Manager for Tyson OBC. Worked for Tyson for 25 years. Has 4 pullet houses growing for Tyson Shelbyville for the past 4 years.

Family: Children - Nicole, Hayden and Teagan

Education: Bachelors in Poultry Science from NC State University

Hobbies: Golf, Hunting, Fishing and Riding Motorcycle

Community involvement: Shelbyville Mills Baptist Church

Main activity outside work: Church, family time, working on the farm

Shane Joyner, 2nd Vice President

Hometown: South Fulton, TN

Professional: Live Production Manager, Tyson Foods Obion County Complex for 18 years. Has also served as Live Production Trainee, Broiler Tech, Construction Coordinator, and Broiler Manager in his 23 years with Tyson.

Family: Married to Mary Margaret, children - Adrienne & Morgan

Education: Bachelors in Natural Resource Management from UT Martin

Community Involvement: Shane has been a part of the UT Martin Governor's School for 19 years and just started up a broiler house for students at the UTM.

Outside of work/hobbies: Mainly works around the farm but enjoys hunting, fishing and horses

Chynette Todd, Secretary/Treasurer

Hometown: Cookeville, TN; originally from Palmer, TN

Professional: Owner of CT Consulting for the past 3 years. Previously with Keystone Foods for 11 years holding various positions including Broiler Service Technician, Animal Welfare/Biosecurity Specialist, Broiler Manger

Family: Married to Andy, daughter - Aubrey Bandy

Education: MA in Leadership, BS in Agriculture from Tennessee Technological University

Interesting facts about yourself: I've been involved in the broiler industry all my life. My family grew broilers for 32 years. Out of college, I started to work at Keystone and I'm so thankful for the opportunities that the poultry industry has provided me over the years.

Community involvement: Member of Oak Hill Church

1-2 things you're most proud of: My daughter is what I am most proud of. Watching her grow and be successful in her dreams is important to me.

Hobbies: Love showing horses with my family. We travel to a lot to shows throughout the summer, so it keeps us busy. I also love to hunt and do about anything outdoors.

Getting to Know your TPA Board of Directors

Scott Black, Immediate Past President

Hometown: Cleveland, TN; originally from Dayton, OH

Professional: Technical Service for Cobb Vantress for the past 8 years

Family: Married to Sara, children - Clay, Riley & Emmi

Education: BA in Business Management and BA in Human Resources from UT Chattanooga

Community Involvement: Works with the youth at church

Hobbies: Remodeling houses

Darryl Brown

Hometown: Lawrenceburg, TN

Professional: Owner/operator of Laurel Hill Farms growing pullets for Aviagen for 14 years. Previously worked at Nissan in Smyrna, TN, for 16 years.

Family: Married to Amanda, children - Brady (22 - currently attending Mississippi State College of Veterinary Medicine); Darra (19 - Sophomore at Columbia State Community College majoring in Elementary Education)

Main activity outside work: I work on the farm with cattle.

Hobbies: I like to work on antique tractors.

Don Davis

Hometown: Chattanooga, TN; originally from Roxboro, NC

Professional: Koch Foods Chattanooga Complex Manager for the past 15 years. Previously at Perdue complex, Operations and Plant Manager, Live Production, Broiler Manager and Broiler Service Tech

Family: Married to Marcie, children – Matthew, Sadie Charles, and Michael

Education: B.S. Ag Education with emphasis on Ag Engineering from NC State

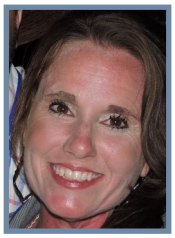
Interesting facts about yourself: Enjoy composing Christian worship songs

Community involvement: As part of YMCA and Board President in Pocomoke, MD the team had a new YMCA building construction to serve that area. Helped steward Perdue Accomac to work with Head Start to build a daycare – first business partnership of that type in the U.S.

Main activity outside work: Family activities and playing in a praise band at Signal Crest U.M.C.

Hobbies: Enjoy guitar, golf, and history

Jeannell Goines



Hometown: Blairsville, GA; originally from New Caney, TX

Professional: Sales Manager with Aviagen for the past 8 years. Previously Complex Manager for Pedigree male lines with Cobb in OK; Production Manager for Hubbard in AR.

Family: Married to Butch, children - Wesley & Ashley

Education: Poultry BS from Stephen F. Austin, Minor in Business and Biology; Henderson State MBA coursework

Community Involvement: TPA Board Member, active in GA Poultry Federation, speak at UNG over poultry genetics

Interesting facts about Jeannell: Loves antiques and to interior decorate. Also fishing, shooting and wing hunting.

Main activity outside work: House work and outside improvements

Hobbies: Spending time with our kids and grandson. Travel and new adventures.

David Tallent

Hometown: Spring City, TN

Professional: Full-time farmer growing breeder hens for Hubbard/Aviagen. Retired on May 1, 2019 after spending over 30 years with River Valley Ag Credit as a Branch Manager and Relationship Manager (Poultry Specialist).

Family: Married to Krissy, children - Davinity, Garrett, Alexandra & Alyssa

Education: BS in Ag Engineering from UT Knoxville

Interesting facts: 5th generation to live/work on Crosby Spring Farm, a TN Century Farm; Wolf Creek Baptist Church member and former NAMB MSC missionary; current Treasurer and former President of the Rhea Co. Cattlemen's Association

Hobbies: all sports

Getting to Know your TPA Board of Directors

Clint Lauderdale

Hometown: Cullman, Alabama; originally from Douglas, AL

Professional: Southern Regional Manager with Jones-Hamilton Co., 11 years with the company, 6 years in this position. Previously worked with Gold Kist as Live Production Manager and Broiler Manager; Wayne Farms as Hatchery Manager, Live Haul Manager, and Processing Plant Maintenance Manager

Family: Married to Melanie, Daughter—Maghen

Education: B.S. Poultry Science from Auburn University

Interesting facts about yourself: IronMan Triathlon Finisher (140.6 miles Swimming, Biking, Running); I paid my way through junior college working as a Small Engine Mechanic

Community involvement: Serve as Deacon at Mt. Olive Primitive Baptist Church

Main activity outside work: Running, Biking, Aerobic gym classes

Hobbies: Hunting, fishing, kayaking, hiking, collecting arrowheads

Dale McLerran

Hometown: Moss, TN

Professional: Growing breeders for Cobb-Vantress for the past 7 years. Previous careers include Walmart management, Medical Equipment & Supply Purchasing and Safety/Insurance Director. After years of part-time farming , contracting with Cobb has allowed Kim and myself to stay at home and work and build our operation for the future.

Family: Married to Kim, Children - Jessica & Baileigh, Grandson - Kason

Education: Bachelors in Business Management from TN Tech University

Interesting facts: History enthusiast (especially US History) genealogy, also raises beef cattle and hay

Hobbies: Fishing

Community involvement: Member of Beech Bethany Church of Christ, board member with the Clay County Soil Conservation District and past county commissioner

Main activity outside work: Spend time with family and friends, travel with Kim when we have time

Bart Smith

Hometown: Clay, AL; originally from Boaz, AL

Professional: Market Manager Poultry with Sunbelt Rentals for the past 5 years. Began career as Sales Rep at Gold Kist in Ellijay GA in 1989. In 1991, became New Accounts Sales Manager with Marshall Durbin Companies in Birmingham, AL. In 1997, accepted sales position with Americold Logistics and has been a vendor to the poultry industry as a logistics supplier, mechanical services supplier and now rental equipment supplier since.

Family: Married to Julie, children - Aubrey & Alex

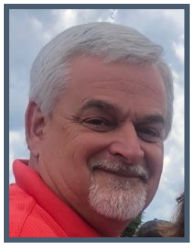
Education: Masters in Agricultural Business & Economics from Auburn University

Interesting facts: I have a love for music. Julie and I met singing in an ensemble at Auburn. I am also a music trivia geek.

Community Involvement: Deacon Leadership Team – Crosspoint Church, Relay for Life Emcee for Birmingham Metro event 5 years

Hobbies: Golf, music, yard work, hanging out with my family

Don Stone



Hometown: Pittsboro, NC; originally from Anderson, SC

Professional: Territory Sales Manager with Marel for 3 years. Been with Marel for a total of 7 years. Previously Plant Manager for Pilgrims - Sanford, NC; APM and Plant Manager for Townsends - Pittsboro, NC; and Maintenance Manager and APM with Townsends - Millsboro, DE

Family: Married to JoSue, children - Ashley, granddaughter Paisley

Education: BS in Mechanical Engineering Technology (1983) from Clemson University

Community involvement: Goldston United Methodist Church , Meshach's Carpenters (disaster recovery mission)

Main activity outside work: Trying to keep up with home and land when not on the road!

Hobbies: Clemson football, antique tractors, hunting

TPA NEWSLETTER ADVERTISING

The TPA Newsletter is a quarterly publication that is distributed by email and is available on the TN Poultry Association website (www.tnpoultry.org). It is sent electronically to our database of approximately 1400 poultry & allied company representatives and poultry growers.

Ad Size	Price per issue (Non-members)	Price per issue (Current members)
Business Card	$125	$75
1/4 Page (4.25"x5.5")	$250	$150
1/2 Page (8.5"x5.5")	$450	$265
Full Page (8.5"x11")	$650	$375

2019 Newsletters	Ad Submission Deadline	Target Distribution Date
Spring	February 22	March 6
Summer	May 24	June 5
Fall	August 23	September 4
Winter	November 22	December 4

Submission Guidelines

- Ads should be sent as high resolution JPG files to tracy@tnpoultry.org.
- Ad position is rotated between regular advertisers.
- Single issue ad position is random.
- Discounts available for multiple ads placed in a single issue.
- Discounts available for non-members who sign an annual contract for 4 consecutive ad placements.

Tennessee Poultry Association

Tennessee Poultry Association

TN Poultry Association
P.O. Box 1525
Shelbyville, TN 37162
www.tnpoultry.org

Executive Director
Dale Barnett
(931) 225-1123
(931) 434-8045 mobile
dbarnett@tnpoultry.org

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

Follow us @tnpoultry on Facebook and Twitter

Like A Boss

By Jennifer Sicking in Tennessee Alumnus

Nolan Wildfire sings with children in Rwanda

Agnes Uwizeyimana labored in potato fields, hacking at the rocky, volcanic earth with a hoe. Straightening her back at the end of the day, she had earned about 800 Rwandan francs (less than $1) from the seasonal work.

After leaving school in the ninth grade, Zahara Umulisa struggled to find a job. She took what she could find, even sweeping streets.

After finishing high school, Immaculet Tuyisenge aspired to attend college, but with no money to pay for it, it remained a dream. And, without a college degree, she struggled to find work.

Then each heard of a program involving chickens.

Making a Profit

That program, Tworore Inkoko, Twunguke (Let's Raise Chickens, and Make a Profit), is accomplishing its goals of changing lives, including the lives of these three women, in one rural Rwandan district.

It's led by the UT Institute of Agriculture Smith Center for International Sustainable Agriculture and Rwandan company Zamura Feeds—and funded by $1.9 million in grants from the U.S. Agency for International Development in Rwanda and the African Sustainable Agriculture Project Foundation. Through it, faculty, staff and students began journeying from Knoxville to the Land of 1,000 Hills in early 2017. Working with smallholder farmers in rural Musanze District of northern Rwanda, the project had a simple goal: improve the nutrition and raise the economic level of farmers, who often live on the equivalent of 50 cents a day.

"With the nationwide malnutrition rate about 38 percent in children under 5 years old, Tworore Inkoko is playing a huge role in bringing this rate down by providing access to animal -sourced protein in the form of broiler meat," says Ritah Nshuti, Zamura Feeds quality assurance manager and Tworore Inkoko project manager.

It also gives families access to regular incomes.

"In many instances, monthly income per family has doubled, tripled and quadrupled," Nshuti says.

Built on Faith

Donnie Smith ('80 Knoxville) sees his work in Africa as a calling, and it's one he intends to follow until his end. And, why Rwanda? If he believed in chance meetings, he might call it that. But he doesn't.

"God opened the door. We marched in, and here we are," Smith says.

Smith's partnerships in Rwanda are built upon his 30 years of working for Tyson Foods, beginning as a field man helping Tennessee poultry farmers raise better chickens and ending as CEO and president. He retired in 2016.

It's also built upon his faith.

"About 2010, I think God started stirring in my heart this desire to take what I had learned through, then, probably close to 30 years of industry experience, and use that to help farmers in Africa," he says.

To that end, he and his wife, Terry (Knoxville '80), established the African Sustainable Agriculture Project Foundation in 2012 to work with African farmers to create businesses that could compete with any farmer in the world. The Smith family's giving also helped launch the UTIA Smith Center to find sustainable solutions to the world's agricultural, food and natural resource challenges.

click here for full article

TPA ANNUAL MEETING & SUMMER GETAWAY REGISTRATION FORM

Register online at www.tnpoultry.org

Tennessee Poultry Association

"Honky Tonk Land"

August 2-3, 2019

DoubleTree Nashville Downtown

Tennessee Poultry Association

Name _____

Company _____

Address _____ City _____ State _____ Zip _____

Cell Phone _____ Email _____

Guest Names 1) _____ 2) _____

3) _____ 4) _____

SPONSORSHIP, AUCTION, MEMBERSHIP

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

____ # planning to attend the **Annual Meeting and speaker program at 1:00 PM on Friday, August 2rd** (No registration fee)

____ # planning to attend the **Friday evening reception and silent auction @ 5:30** (No registration fee)

____ I would like to contribute the following auction items:

_____

____ I will bring the items with me ____ I will ship the items to TPA

____ I am donating $_____ to purchase auction items

REGISTRATION DEADLINE: July 1, 2019

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

https://doubletree.hilton.com/en/dt/groups/personalized/B/BNADUDT-TPL-20190731/index.jhtml?WT.mc_id=POG

or by calling 800-222-8733 using group code TPL

TPA special room rate available until 7 pm July 2, 2019

GOLF TOURNAMENT

Sat., August 3rd, 8 a.m. @ Pine Creek Golf Course, Mt. Juliet, TN

(Please complete a separate registration form for each golfer)

Golfer Entry @ $ 135.00 $ _____
(Includes greens fee, cart, lunch, 1 mulligan, 1 red tee)

Golfer's T-shirt Size _____

Golfer's Handicap or Average Score (required)

Sponsor a Golf Hole x ____ @ $ 200.00 $ _____

SPORTING CLAYS SHOOT

Sat., August 3rd, 9 a.m. @ Nashville Gun Club, Nashville, TN

(Please complete a separate form for each shooter)

Shooter Entry @ $ 135.00 $ _____
(Includes fees, shells, 5 extra shots, snacks, lunch)

Shooter's T-shirt Size _____

Gauge of shotgun you will be using (required)

Sponsor a Shooting Station x ____ @ $ 200.00 $ _____

GRAND OLE OPRY/HERMITAGE TOUR

Sat., August 3rd, 9:00 a.m. - 3:00 p.m.

(Please complete a separate form for each participant)

Attendee Registration @ $ 150.00 $ _____
(Includes tour, transportation, lunch)

Attendee's T-shirt Size _____

SATURDAY DINNER & ENTERTAINMENT

August 3rd, reception @ 5:00 pm, dinner @ 5:30 pm

Dinner Tickets ***Reservations required***
(Includes entertainment) x ___ @ $200.00 $_____

CONFERENCE REGISTRATION FEE

Individual @ $ 35.00 $ _____

Couple @ $ 50.00 $ _____

GRAND TOTAL
from both columns

$

NO REFUNDS

Tennessee
Poultry Association

Youth Art Contest Entry Rules

TPA welcomes participation in our fourth annual art contest for youth. All entries will be displayed and judged during the TPA Annual Meeting & Convention this August 2-3 in Nashville at the DoubleTree.

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

Who is eligible: Family members (children, grandchildren, nieces/nephews, step-children, etc.) of TPA grower members, TPA poultry complex employees, or affiliated TPA allied company members are eligible to submit entries. There will be three age categories: 9 and under, 10-14, 15-18 (age as of August 1, 2019).

Awards: Each group will have 1st, 2nd, and 3rd place winners that will be awarded ribbons and will be eligible to receive cash prizes of $50, $20 & $10, respectively for each age division. There will also be an overall *Best of Show* entry awarded, which will subsequently be auctioned off during the TPA fundraiser on Aug. 3 in lieu of the cash prize. All proceeds from the sale of the winning art piece will be awarded to the artist as a scholarship.

Media: Art will need to be submitted on 8½ by 11 inch rigid canvas, sketch or cardstock paper

* Framed entries **will not** be accepted, but all entries must be suitable for framing
* Drawings and paintings are the only types of media that can be entered; there will not be separate categories
  - Drawings include: pencil, charcoal, colored pencil, ink, markers, etc.
  - Paintings include: acrylic, oils, tempera, watercolors, etc.

Entry: All entries must be received at the TPA Office ***by July 26, 2019***.
Mailing Address: TN Poultry Association, 1404 N Main Street, Shelbyville, TN 37160

Include: Please complete and submit the attached form to provide the artist's name, age, address, phone number, name of relative and their poultry company or farm affiliation. Artwork will not be returned unless the attached form and requested information is submitted.

Judging: All entries will be judged by a panel of industry representatives during the TPA Annual Meeting on August 2nd.

Information:

- The art will stay on display through the evening TPA banquet on August 3rd.
- Photo rights of all artwork become property of TPA for use on social media and for promotional efforts.
- TPA is not responsible for lost or damaged entries.
- TPA will auction off the *Best of Show* winner. It will not be returned to the artist. Please allow two weeks for remaining entries and ribbons to be mailed.
- Contact tracy@tnpoultry.org or 270-363-2078 for more information.

Tennessee
Poultry Association

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

TPA Art Contest Entry Form

Name: _____

Age: _____ Contact Phone Number: _____
(As of August 1, 2019)

Family member's name: _____

Relationship: _____ Hometown & State: _____

Employer: _____

Or grows for: _____

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

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

_____

_____

_____
City State Zip Code

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

Please include this entry form along with your entry to be received by TPA *no later than* July 26, 2019.

Please send all entries to:

TN Poultry Association
1404 N. Main St.
Shelbyville, TN 37160

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