

2018

# CHICKEN MARKETING SUMMIT

# Survive and thrive in disruptive times

July 22-24, 2018

Four Seasons Resort Orlando at Walt Disney World® Resort, Orlando, Florida

See Dynamic Keynote Speaker:  
**Lampkin Butts, Sanderson Farms**  
president and Chief Operating Officer



Early bird savings end **June 1**

Register now! >>

The logo for the 2018 Chicken Marketing Summit. It features an orange circle with the year '2018' in white. To the right of the circle, the words 'CHICKEN', 'MARKETING', and 'SUMMIT' are stacked vertically in a blue, sans-serif font. The background of the slide is a light blue gradient with a pattern of darker blue, elongated oval shapes.

# 2018 CHICKEN MARKETING SUMMIT

## Don't just survive. Thrive!

2 days of essential educational sessions:

- Identify the current market disruptors in the poultry marketplace
- Prepare to react to the disruption
- Learn how to improve your business and overcome the disruption
- Discover how to become a disruptor yourself

Learn more at: [www.ChickenMarketingSummit.com](http://www.ChickenMarketingSummit.com)



# WATT PoultryUSA

The magazine for the integrated poultry industry

[www.WATTAgNet.com](http://www.WATTAgNet.com)

## Broiler respiratory tracts: A route for Salmonella?

### PLUS

Improve broiler litter  
quality with increased  
air circulation

Washing broiler transport  
cages - if not, why not?





INTRODUCING

*Salmonella*

360°

A HOLISTIC  
APPROACH TO  
FOOD SAFETY

## EVERY PHASE MATTERS

True *Salmonella* solutions require an integrated, comprehensive approach, which means every stage from egg to plate should be treated as the last line of defense.

FIND OUT HOW YOU CAN MAKE AN IMPACT  
NO MATTER WHAT YOUR ROLE IN THE FOOD CHAIN AT

**SALMONELLA360.US**

PHASE

01

breeder/hatchery

PHASE

02

grow-out

PHASE

03

processing

PHASE

04

food chain





**Subscribe Now to Receive**

**FeedStrategy**

Animal feed solutions for a growing world

**The animal feed processing resource  
for navigating today's  
consumer-driven protein production.**

**SUBSCRIBE**



## **Feed Strategy** features will include:

- » Expert editorial coverage from Jackie Roembke, Ioannis Mavromichalis and more
- » Exclusive insights on feed manufacturing technologies
- » Special reports including World Feed Panorama, Top Global Feed Companies and Nutrition & Feed Survey Results

Don't miss an issue, subscribe today:

**SUBSCRIBE**

# WATT PoultryUSA

The magazine for the integrated poultry industry

## COVER STORY

### 14 Broiler respiratory tracts: A route for Salmonella?

Dust inside the growout house should be considered as a potential salmonella transmission route.

DR. DIANNA BOURASSA

## FEATURES

### 16 Improve broiler litter quality with increased air circulation

AUSTIN ALONZO

### 22 Washing broiler transport cages - if not, why not?

NELSON COX, ET AL.

### 26 7 ways the turkey industry is looking to increase demand

AUSTIN ALONZO

### 32 What will the broiler of the future look like?

CINDY BURGOS ALVARADO

### 36 9 disruptive technologies coming to the poultry industry

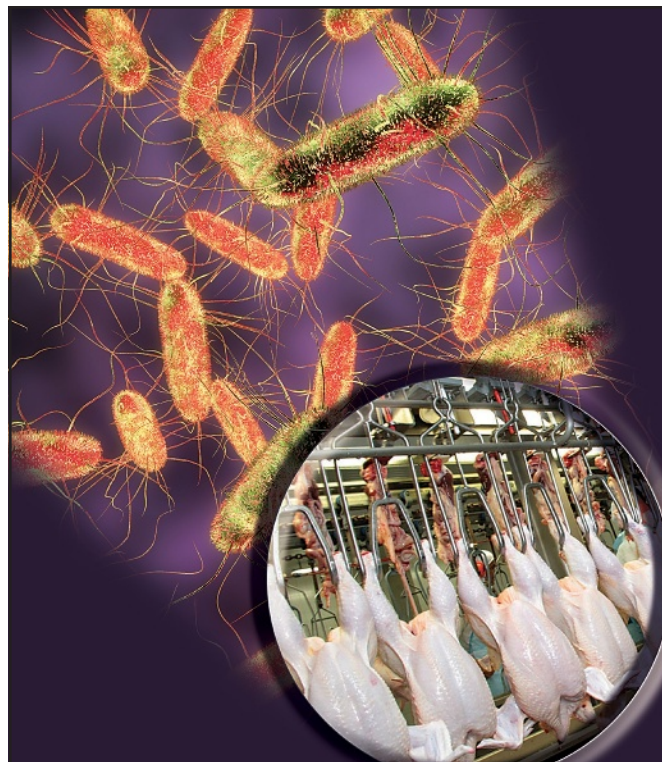
AUSTIN ALONZO

### 40 Wayne Farms' sustainable poultry wastewater solution

JOHN PIERSON

### 42 New model to improve broiler production sustainability

ALYSSA CONWAY



Composite created with: Tyrannosaurus | BigStockPhoto.com and Associação Brasileira de Proteína Animal

## NEXT ON THE PLATE

2 » Why isn't there a turkey burger at McDonald's?

» How to market chicken to digitally dependent consumers

45 Product Review

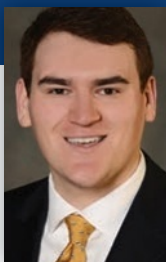
47 Market Place

48 Ad Index



# » NEXT ON THE PLATE

## Editor's Comment BY AUSTIN ALONZO



# Why isn't there a turkey burger at McDonald's?

Everyone knows turkey is a delicious and nutritious substitute for ground beef, right? So why isn't the turkey burger on more fast food menus?

At the National Turkey Federation's Annual Meeting in San Diego, Jerome Lyman, director of Farm Foundation and formerly an executive with McDonald's Corp., was asked why the turkey burger isn't found at the Golden Arches.

## Making a strong argument

The reasoning, he said, is the same as why turkey struggles to get onto plates outside of North America: a lack of a compelling argument

filled with facts and passion. Has the turkey industry, he asked, made the argument sufficiently that it should be exporting to China or be included on the Extra Value Menu? Just because it's desirable for the turkey industry, he said, doesn't move the needle.

Lyman pointed to Apple Inc. and Starbucks Corp., two wildly successful American companies and beloved international brands, which have been successful at convincing consumers to pay far more for something than it's arguably worth. The \$800 smartphone and \$5 cup of coffee are ubiquitous because the companies argued – with facts and passion – they make a higher quality product and offer a better consumer experience than their predecessors and contemporary competitors.

## The missing ingredient

While the turkey industry is not a monolithic corporate entity, it would be wise to copy this playbook. Lyman said the fact base is already there: The product is sustainable, it's nutritious, it's tasty and it melds well with other flavors. Turkey is a feel-good product. The key ingredient missing in making a compelling argument, in his mind, is the passion.

"So it seems to me that if you take all those facts and you throw a lot of passion in it, and it's got to be the passion of all the people in this room, I think there's a future in that," Lyman told the audience of turkey industry insiders and allies. "But I believe we've got to step up the passion." ■



**The turkey burger carries a reputation as a healthy alternative to the ground beef variety, but it's not commonly found at major fast food chains.**

*lisafx | Bigstock.com*

WATTAgNet.com

## CORPORATE HEADQUARTERS

401 East State Street, 3rd floor  
Rockford, IL 61104  
Tel: +1.815.966.5574

## Publisher:

Greg Watt; [gwatt@wattglobal.com](mailto:gwatt@wattglobal.com)

## Executive Vice-President/

Publisher Global Petfood and Events:

Steve Akins; [sakins@wattglobal.com](mailto:sakins@wattglobal.com)

## Director of Data Development:

Bruce Plantz; [bplantz@wattglobal.com](mailto:bplantz@wattglobal.com)

## Director of Global Agribusiness Sales:

Jeff Miller; [jmiller@wattglobal.com](mailto:jmiller@wattglobal.com)

## EDITORIAL TEAM

Editor: Austin Alonzo;

[alonzo@wattglobal.com](mailto:alonzo@wattglobal.com) Tel: +1.815.966.5588

## Director of Content:

Terrence O'Keefe; [tokeefe@wattglobal.com](mailto:tokeefe@wattglobal.com)

## Digital Content Director:

Tara Loszach

## Poultry Confidence Index:

Greg Rennie, Ph.D.

## Senior Editor:

Alyssa Conway

## Associate Editor:

Ann Reus

## Staff Reporter:

Roy Graber

## Social Media & SEO Editor:

Kathleen McLaughlin

## ART/PRODUCTION TEAM

Senior Art Director: Elizabeth Crosby

Production Manager: Bill Spranger;

[bspranger@wattglobal.com](mailto:bspranger@wattglobal.com) Tel: +1.815.966.5427

## Advertising Production Coordinator:

Connie Miller

## SALES TEAM

### USA/CANADA

Regional Manager: Pam Ballard,

Midwest, West, Canada;

[pballard@wattglobal.com](mailto:pballard@wattglobal.com) Tel: +1.815.966.5576

Regional Manager: Mary Harris,

East, Southeast;

[mharris@wattglobal.com](mailto:mharris@wattglobal.com) Tel: +1.815.980.5938

Sales Representative: Arthur Hartnett

[ahartnett@wattglobal.com](mailto:ahartnett@wattglobal.com) Tel: +1.815.966.5405

### EUROPE, ASIA, AFRICA

Frans Willem van Beemen;

[fvanbeemen@wattglobal.com](mailto:fvanbeemen@wattglobal.com) Tel: +31.344.653442

### EUROPE, LATIN AMERICA

Tineke van Spanje;

[tvanspanje@wattglobal.com](mailto:tvanspanje@wattglobal.com) Tel: +31.495.526155

### SOUTHEAST ASIA

Dingding Li;

Southeast Asia, Hong Kong, Taiwan

[dingdingli@vip.163.com](mailto:dingdingli@vip.163.com) Tel: +86.21.6447.4625

For article reprints and reprint quotes contact

## FosteReprints

+1.866.879.9144 [www.fosterprinting.com](http://www.fosterprinting.com)

## SOCIAL MEDIA



<https://www.facebook.com/WATTAgNet>



<https://twitter.com/WATTAgNet>



[www.youtube.com/WATTAgNetTV](http://www.youtube.com/WATTAgNetTV)



[www.linkedin.com/groups/WATTAgNet-4855866](http://www.linkedin.com/groups/WATTAgNet-4855866)



*Different by Nature*



AviPlus® P, the most-advanced **microencapsulated** combination of organic acids and nature-identical compounds to consistently improve feed efficiency and growth rate in poultry, as per the European Food Safety Authority specific approval.

It is a unique product: the ingredients are **slowly released** along the gastro-intestinal tract where they can **synergistically** improve the intestinal integrity increasing the efficiency of nutrient absorption and, consequently, growth performance.

Its innovation and efficacy are proven by **International patents** and peer-reviewed publications.

AviPlus® P. Pick the difference that makes the difference.



Click the links to read **WATTAgNet** news



[www.WATTAgNet.com/topics/459](http://www.WATTAgNet.com/topics/459)

## Effective science communication must have human voice

Although researchers and scientists have the facts to back up their arguments, how they communicate with the general public is not effective ...

[www.WATTAgNet.com/articles/33874](http://www.WATTAgNet.com/articles/33874)



moryachok | BigStockphoto.com



Austin Alonzo

## 3 business ideas the US turkey industry should consider

The key to a successful, vital business is maintaining a founder's mindset, an insurgent attitude ...

[www.WATTAgNet.com/articles/34065](http://www.WATTAgNet.com/articles/34065)

## Marfrig Global Foods to sell Keystone Foods

Marfrig Global Foods has plans to sell Keystone Foods, the 10th largest poultry company in the United States ...

[www.WATTAgNet.com/articles/34056](http://www.WATTAgNet.com/articles/34056)



PhotoShopAustralia | BigStockPhoto.com



SECURING OUR FUTURE  
ONE STEP AT A TIME

*The champion for safe and sustainable feed and food production through education and research.*

### Educational Initiatives:

- Preserving consumer choice
- Protecting the industry image and license to operate

### Research Initiatives:

- Legislative and regulatory policy support
- Feed and food safety
- Sustainability

T: (703) 524-0810 • [ifeeder@ifeeder.org](mailto:ifeeder@ifeeder.org) • [ifeeder.org](http://ifeeder.org)





# The Gold Standard.



***Lubing Conveyors are the safest ride for your eggs from nest to packer!***

The Lubing name has become one of the most trusted names in the industry because of our exceptional quality, reliability, performance and trouble-free operation.

- **Custom Configurations** - Lubing Breeder Conveyors can be configured to work with any imaginable requirements; any necessary curves, heights and distances.
- **System Specifications** - Available in 14-in and 20-in widths.
- **System Benefits** - Eliminates manual labor of egg collection and reduces egg damage.
- **Fast Installation** - Components ship completely preassembled for easy, quick installation.
- **Superior Service Life** - With more than 40 years developing conveyor products, Lubing conveyors have an established reputation for longest lasting product life on the market.



Got Lubing? Contact us or your local Lubing Distributor for more detailed information on our Breeder Conveyor Systems.

**LUBING**  
A Tradition of Innovation.

## » NEXT ON THE PLATE

# How to market chicken to digitally dependent consumers

One of the food industry's top thought leaders to offer e-commerce solutions at the 2018 Chicken Marketing Summit.

E-commerce will increasingly affect chicken marketing and the supply chain as consumers use digital tools and connections from voice-activated digital assistants to virtual reality to manage their food choices.

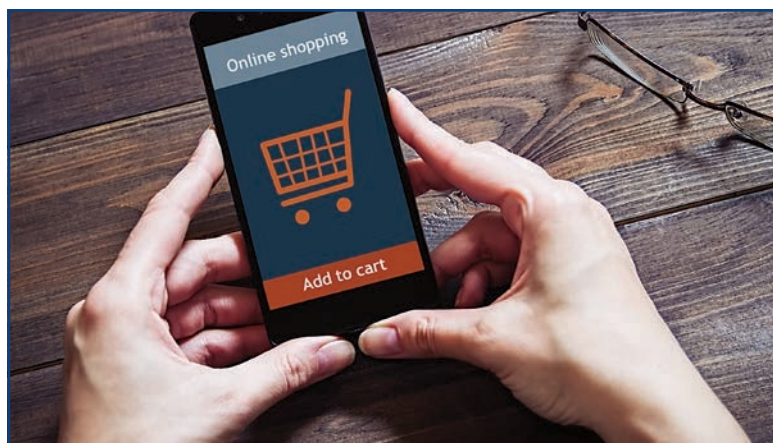
Chicken marketers attending the 2018 Chicken Marketing Summit will learn strategies for successfully responding to the digitally enabled retail and foodservice marketplace.

One of the retail food industry's pre-eminent advisers, Bill Bishop of Brick Meets Click, will explore how chicken marketers can better align with consumers and retailers to successfully sell more to digitally connected shoppers.

### How to respond to growing digital dependence

Bishop will discuss ways for marketers to respond to the growing digital dependence that is impacting

» The 2018 Chicken Marketing Summit is scheduled for July 22-24 at the Four Seasons Resort Orlando at Walt Disney World.



**Attendees at the Chicken Marketing Summit will learn how to assess the needs of suppliers and serve the chicken needs of consumers.**

*MrMrsMarcha, Bigstock.com*

the way consumers make chicken purchasing decisions.

“It’s this increasing digital dependence that enables the modern grocery businesses to move beyond the mass market to serving multiple tightly focused niche markets. This new range of possibilities applies to both buying in person/store, as well as shopping online and will drive

major changes in the way chicken products are sold and bought in retail and foodservice formats,” he said.

The presentation will examine the capabilities chicken processors, foodservice operators and retailers will need to completely serve the chicken needs of consumers. The following will be included in the presentation:

- The range of different options to connect with digital shoppers
- The types of digital product content needed to engage consumers, e.g. blockchain
- The key characteristics of online ordering platforms for pickup and delivery





**Chicks**  
dig a beetle-free  
environment.

INTRODUCING

**Tobex**<sup>TM</sup>  
Multi MoA Concentrate

For poultry producers who need to protect their investment, MGK developed Tobex, **the first darkling beetle product with multiple modes of action.** Tobex combines the power of a knockdown agent, a long-lasting insecticide, a synergist, and an IGR into a single product with controlled-release technology. Eliminating the need to mix multiple products saves you time and lets you move on to your next task.



[www.MGK.com](http://www.MGK.com)







## EDGE<sup>®</sup> CONTROL

### REMOTE ACCESS

Take control of your system from the comfort of your truck, office, couch or anywhere in between.

### MODULAR AND SCALABLE

Build a system to fit your needs with any combination of plug-in cards or expansion boxes.

### TRIPLE LAYER PROTECTION

Integrated diagnostics, full redundant power supplies and communication paths, and fail safe mode

### EASY NAVIGATION

Large 15" color touchscreen interface for simple operation

LEARN MORE AT  
[CUMBERLANDPOULTRY.COM](http://CUMBERLANDPOULTRY.COM)



Copyright © 2018 AGCO Corporation  
Cumberland is a part of GSI, a worldwide brand of AGCO

## » NEXT ON THE PLATE



Learn more and register for the 2018 Chicken Marketing Summit: [www.WATTGlobalMedia.com/chickenmarketingsummit](http://www.WATTGlobalMedia.com/chickenmarketingsummit)

Bill Bishop of Brick Meets Click will explore how chicken marketers can better align with consumers and retailers to successfully sell more to digitally connected shoppers. | Courtesy Brick Meets Click



### Implications for chicken packaging, merchandising

“While no one knows exactly where all this is headed,” he said, “it’s possible to build a vision of what the future is likely to look like based on the changes already underway. This vision can then serve as a backdrop to consider implications for packaging, marketing and merchandising of chicken. It can also provide a framework for thinking about where and how different players in the chicken business can fit into the new marketplace.”

### Brick Meets Click

Bill Bishop co-founded Brick Meets Click in 2011 with Steve Bishop. Today, as its chief architect, he focuses on analyzing the forces driving change in food and grocery retailing and providing practical

guidance on how to respond effectively.

Early in his career, Bill was the vice president of research at the Supermarket Institute (now Food Marketing Institute). Later, he founded Willard Bishop Consulting and led major studies on new store formats, pricing strategy, direct store delivery and loyalty marketing. He also helped create the supermarket-focused Coca-Cola Retailing Research Council (CCRRC) and convenience retail-focused NACS/CCRRC.

Bishop earned a Ph.D. in Agricultural Economics and Marketing from Cornell University. He has taught marketing channels at Northwestern University’s Kellogg School of Management, and he has also served on the boards for Raley’s Fine Foods and The Food Institute. ■

## PERDUE INVESTS \$42 MILLION IN GEORGIA PLANT EXPANSION

Perdue Farms will create 125 new jobs and invest \$42 million to expand its cooking operation in Perry, Georgia.

Perdue’s cooking operation in Perry produces a variety of frozen, cooked chicken products for consumers and restaurants.



# TAKE CONTROL

You're a nutritionist, HVAC Engineer and Bio-Security Expert before your second cup of coffee. Multi-tasking is an understatement. With EDGE, advanced control and management of your environment is at your fingertips. So, you can stop being jack of all trades and enjoy another cup of joe.

*Ready for your custom solution? Contact your Cumberland dealer for an expert who stands with you and behind the products we manufacture.*

## »NEXT ON THE PLATE



**Perdue Farms CEO Randy Day.**

*Perdue Farms*

“Perdue Farms’ contributions to our poultry industry span more than a decade and continue to drive the growth of agribusiness in middle Georgia,” said Georgia Gov. Nathan

Deal. “As a valued member of our business community, Perdue Farms understands the benefits of utilizing Georgia’s logistics infrastructure and network of resources when expanding operations. This new investment in Houston County will not only create even more quality jobs for the community, but also will reaffirm Georgia’s reputation as a leader in agribusiness.”

Perdue Farms will install a third cooking line to occupy 30,000-square-feet at the facility, which the company acquired in 2004.

“This expansion will help us meet the growing demand for no-antibiotics-ever and organic

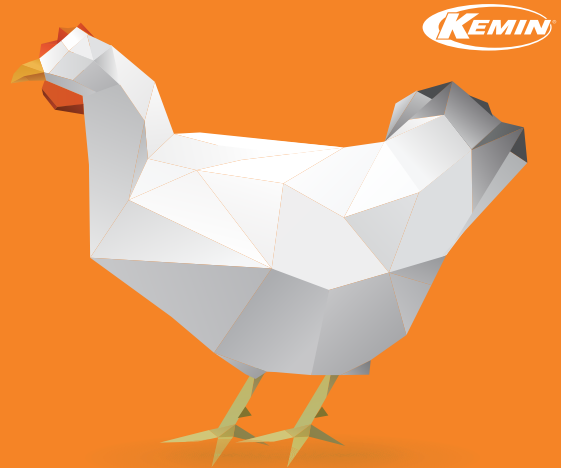
products, and maintain the high level of customer service and reliability our customers in Georgia and across the country expect from Perdue,” said Randy Day, CEO of Perdue Farms. “We’re proud to be an ongoing part of the economic growth happening here in middle Georgia. I want to thank Gov. Deal and his office, (Georgia Agriculture) Commissioner Gary Black and the Department of Agriculture and the Development Authority of Houston County for their support and leadership.”

Since 2004, Perdue Farms has created more than 900 jobs, modernized and expanded its processing

## QUALITY & SAFETY: IT'S ALL BY DESIGN.

### ***Kemin knows chromium.***

Our commitment to chromium promises to provide you with a high-quality, safe and efficacious product to help your animals reach their optimal performance boosting your bottom line.



### **THE CHROMIUM LEADER FOR 20+ YEARS**

[kemin.com/designedforyou](http://kemin.com/designedforyou)

**KemTRACE<sup>®</sup>  
CHROMIUM**  
*Essential to you and your operation.*

© Kemin Industries, Inc. and its group of companies 2018. All rights reserved. <sup>®</sup>™ Trademarks of Kemin Industries, Inc. U.S.A.

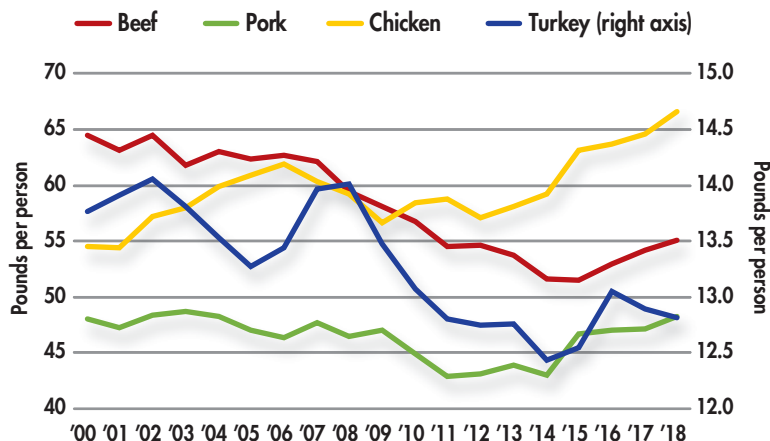


plant, opened a distribution center, and added a cooking plant. A hatchery, feed mill and live production office in Forsyth provide support to more than 140 farmers who raise chickens for Perdue Farms.

“We are grateful for yet another announcement that further solidifies Georgia’s leadership as the top state for poultry production,” said Black. “We are proud of this wonderful Georgia Grown business and celebrate their success with this expansion.”

Georgia Department of Economic Development (GDECD) Senior Regional Project Manager Candice Scott represented the

### Per capita disappearance of chicken, turkey, beef and pork in the US, boneless weight basis



Source: United States Department of Agriculture, LEAP Market Analytics 2018 forecast

### Correction

In the print edition of the April issue of WATT PoultryUSA, a chart appearing with the article, “Domestic supply gains raise concern for broiler industry,” was published with an error. This is the corrected chart.

# SYNERGIZE

## THE PRODUCT FOR ALL OF YOUR DISINFECTING NEEDS

Farm • Hatchery • Boot Bath • Vehicle



800-621-8829 (USA/Canada) or 859-254-1221  
info@neogen.com | animalsafety.neogen.com

## »NEXT ON THE PLATE

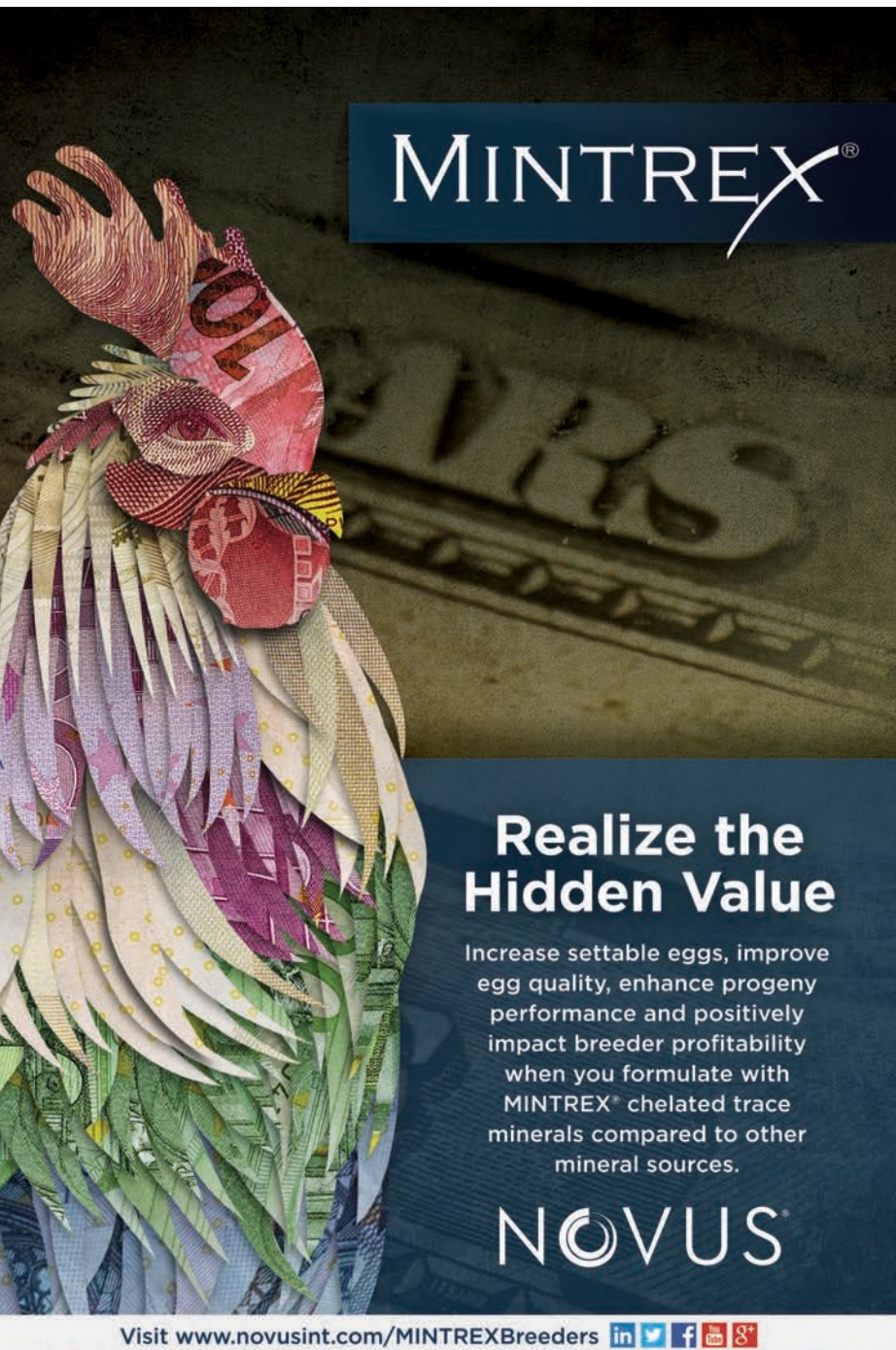
Global Commerce Division in partnership with the Georgia Department of Agriculture and the Development Authority of Houston

County to support the company's decision to invest in Georgia.

"The Development Authority is dedicated to the continued suc-

cess of the existing industry in Houston County by committing both time and resources to ensure their success," said Development Authority of Houston County Board Chairman Mark Byrd. "As we mark the 14th anniversary of Perdue's location in Perry, we find this expansion to be cause for great celebration. We are pleased to partner with Perdue and the State of Georgia to win this project which will bring quality jobs and substantial investment to the region."

"Perdue Farms is an exemplary corporate citizen, and this expansion puts a stamp of approval on Georgia's robust agriculture resources," said GDECD Commissioner Pat Wilson. "I commend our economic development partners at the state and local level who have been critical to this project, and I congratulate Perdue Farms on their continued success in Houston County." ■



**MINTREX®**

**Realize the Hidden Value**

Increase settable eggs, improve egg quality, enhance progeny performance and positively impact breeder profitability when you formulate with MINTREX® chelated trace minerals compared to other mineral sources.

**NOVUS®**

Visit [www.novusint.com/MINTREXBreeders](http://www.novusint.com/MINTREXBreeders) [in](#) [t](#) [f](#) [y](#) [g](#)

### People and companies

- **Koch Foods adding to workforce in Fairfield, Ohio:** Company seeks 150 workers to fill a variety of positions
- **Canada commits funds to help manage avian flu:** Government pledges CA\$2 million to help Canadian poultry producers manage risks





# Protected with Safe-Guard® AquaSol.

**Now approved for laying hens, Safe-Guard® AquaSol** helps you optimize treatment of poultry intestinal worms (*Ascaridia galli* and *Heterakis Gallinarum*) with an innovative, uniform, and farm-friendly drinking water formulation. With zero-day egg withdrawal, you can now avoid the risk of worms infecting your birds with easy, effective **Safe-Guard® AquaSol**.

Trust the Pros at Merck Animal Health.

**safe-guard®** AquaSol  
(fenbendazole oral suspension)

No withdrawal period is required when used according to the label. Consult your veterinarian for assistance in the diagnosis, treatment and control of parasitism.

## THE SCIENCE OF HEALTHIER ANIMALS.

© 2018 Intervet Inc. doing business as Merck Animal Health, a subsidiary of Merck & Co., Inc. All rights reserved.

US/SFG/0118/0002



**MERCK**  
Animal Health



# Broiler respiratory tracts: A route for *Salmonella*?

Dust inside the growout house should be considered as a potential *Salmonella* transmission route.

DR. DIANNA BOURASSA

*Salmonella* is a persistent food safety risk the poultry industry is trying to control in every step from hatching to processing. One potential infection path worth considering is the airborne route.

## Salmonella in dust during growout

*Salmonella* can be spread throughout the litter in a broiler house by several mechanisms including insects, such as flies or darkling beetles, and broiler fecal shedding. The bacteria is then transmitted to broilers through physical contact and ingestion. An additional route of contamination is the presence of *Salmonella* on dust inhaled by the birds.

There's a high variability of the levels of dust present in a broiler house. A wide range of dust concentrations from 0.03 to 6.5 milligrams per cubic meter is influenced by everything from the time of day to the house ventilation differences based on outside temperatures to the levels of bird activity in the house.

Broiler house dust contains a mixture of dander, litter, feed, feces and microbes, with the vast majority of dust containing microbial DNA. Broilers inhaling dust contaminated with *Salmonella* are a potential route of bird contamination and subsequent fecal shedding once colonization occurs.

## How *Salmonella* infects birds through the trachea

Several studies demonstrated inoculating broilers with *Salmonella* within the trachea leads to further intestinal colonization. There is also evidence that the



**During broiler harvest, there is often an increase in the levels of dust in the air.** | Dianna Bourassa

rate of colonization from birds inoculated in the trachea is greater than if birds are orally inoculated.

When comparing five inoculation routes – oral, intra-tracheal, subcutaneous, ocular and cloacal – the intra-tracheal inoculation route led to intestinal tract colonization significantly more frequently than all other routes. In turkeys exposed to *Salmonella*-contaminated fecal dust, *Salmonella* was detected from respiratory tract samples, lungs and small intestines.

The transfer of *Salmonella* from the litter or house dust to the respiratory tract (specifically the trachea) may influence the colonization of the bacteria within the birds and the distribution of *Salmonella* through the flock.

## Harvest dust and *Salmonella*

The presence of dust may also have further impact in the processing plant on broiler product *Salmonella* status.

Generally, catch crew workers wear respiratory protective equipment during harvest (catching) to minimize the amount of dust they inhale. However, the birds themselves do not have any external respiratory protection other than the increased mechanical exhaust ventilation during harvest. Therefore, there is potential for increased levels of dust in the air to be inhaled by the broilers during catching and accumulate in the respiratory tract.

The levels of dust present during catching may depend on the outside ambient temperature. During hot weather, ventilation rates are at maximum levels to prevent bird heat stress. However, during cold weather ventilation rates are at lower levels to prevent bird chilling. This difference in ventilation could affect levels of dust present during broiler catching.

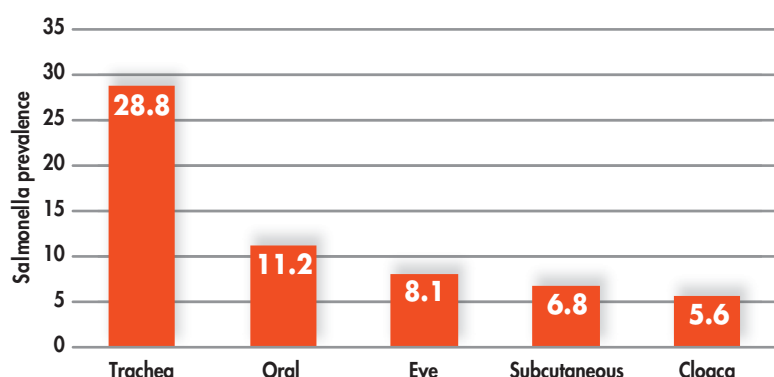
Although it would seem increased ventilation would decrease dust, it is possible increased ventilation rates combined with increased bird activity during harvest may cause resuspension of dust particles. Research shows that greater levels of *E. coli* were detected in air from tunnel-ventilated broiler houses during the summer when ventilation rates were higher in comparison to lower winter ventilation rates.

## Research on tracheal response to bacterial infection

In a study where broiler respiratory tracts were sampled one week prior to harvest, one day prior to harvest and during harvest, there was a trend of decreasing *Salmonella* and *Enterobacteriaceae* prevalence even during catching when dust levels were expected to be higher than normal.

This decrease in respiratory tract bacteria was unexpected considering the increases in dust during harvest. The mucus and cilia lining the trachea are continuously removing dust particles, bacteria and toxins from the air where they are swallowed and enter the esophagus. This mucus coating may aid the passage through the acid environments of the proventriculus and gizzard of young

## Salmonella recovery from multiple inoculation routes



Source: Data adapted from E.V. Chadwick M.S. Thesis, Auburn University

**Salmonella is found at the highest percentage when broilers are inoculated in the trachea.**

chicks and result in intestinal colonization.

An *in vitro* tracheal clearance assay reported a clearance velocity of 2.39 millimeters per minute for chicken embryos. Using this clearance rate, the entire broiler trachea would clear every 1.05 minutes. Tracheal clearance of dust inhaled during catching may have led to the general decrease in respiratory tract bacteria during harvest.



**Read more:** 3 tools to control reactivated *Salmonella* in poultry feed, [www.WATTAgNet.com/articles/32337](http://www.WATTAgNet.com/articles/32337)

## Conclusion

The broiler respiratory tract appears to be an important potential route for *Salmonella* dissemination in a growout house. However, the exposure of broilers to dust during harvest may not lead to significant levels of carcass contamination. Based on this information, steps to minimize the presence of dust during the growout period could potentially decrease levels of *Salmonella* contamination within the house and therefore decrease the levels of *Salmonella* entering the processing plant. ■

*References available on request*

*Dr. Dianna Bourassa is an assistant Professor of Poultry Science at Auburn University specializing in poultry processing. [dvb0006@auburn.edu](mailto:dvb0006@auburn.edu)*



# Improve broiler litter quality with increased air circulation

Increased air circulation capacity can lead to drier litter with more uniform moisture, which helps improve bird health.

AUSTIN ALONZO

Using higher-capacity circulation fans can help control broiler litter moisture levels, leading to healthier flocks and better overall performance.

On March 27, Dr. Brian Fairchild and Mike Czarick shared the results of recent studies conducted to gauge the effectiveness of circulation fans as part of a webinar presented by WATT

Global Media and sponsored by Jones-Hamilton Co. Fairchild, an extension poultry scientist at the University of Georgia, spoke about the importance of litter moisture in flock health. Czarick, senior public service associate at the University of Georgia, spoke about the role circulation fans play in maintaining litter and environmental quality inside the house.



## Why litter moisture matters

Inside the poultry house, controlling the litter moisture level is key to controlling a critical factor in bird health: ammonia.

Fairchild explained ammonia levels are elevated when litter is too wet – specifically when litter moisture is between 20 percent and 40 percent. Heightened ammonia levels lead to health and animal welfare issues like footpad lesions, breast blisters, respiratory health issues and leg deformities. Excessively moist litter can also contribute to coccidiosis problems in flocks.

He presented studies showing how paw quality – one indicator of health and welfare – degrades as litter moisture increases over time. Additional research showed that ammonia levels, and also carbon dioxide, increase as relative humidity rises. So, in order to maintain the best possible bird health, poultry farmers need to set their ventilation rate to control litter moisture.

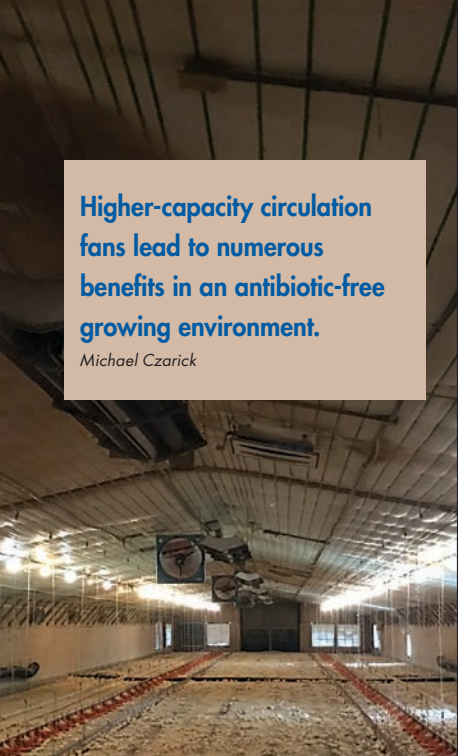


**Maintaining drier broiler litter leads to better animal welfare and flock health.** | Terrence O'Keefe



### Higher-capacity circulation fans lead to numerous benefits in an antibiotic-free growing environment.

Michael Czarick



“When it comes to controlling house moisture, the drier you want your litter to be, the lower your target relative humidity needs to be. At 70 percent relative humidity is going to lead to wet litter and 40 percent relative humidity is going to lead to drier litter,” Fairchild said. “Drier litter is going to give us a much better environment for those birds.”

If moisture is not properly managed, Fairchild said, farmers risk issues like reduced litter quality, reduced litter treatment life, uneven water lines, reduced paw quality, breast blisters, reduced growth, poor feed conversion and increased disease susceptibility.

### Can higher-capacity ventilation help control moisture?

Because of this, the objective of ventilation is now to keep the litter dry under relatively humid conditions, Czarick said. This is

going to require greater air movement than traditional circulation fan systems that worked to mix the air from floor to ceiling to create a uniform temperature and minimize energy usage. It is possible to maintain dry litter in a

relatively damp environment if there's enough damp air moving over the litter.

To meet this challenge, Czarick asked if it's possible to keep the litter drier not by running the fans more – and using more



## We take care. Gut health solutions by Evonik.

### Our direct fed microbials: beneficial, sustainable, science based

Direct fed microbials from Evonik are an effective solution to support balanced gut conditions in poultry & livestock. Talk with our Animal Nutrition specialists about how you can benefit from our new line of feed ingredients.

[www.evonik.com/animal-nutrition](http://www.evonik.com/animal-nutrition)  
[animal-nutrition@evonik.com](mailto:animal-nutrition@evonik.com)

**GutCare®**

**EVONIK**  
POWER TO CREATE

## BROILER LITTER QUALITY

energy – but by increasing circulation fan capacity. Traditionally, circulation fans are mixing about 10 percent of the air in the house every minute. He wanted to know what

would happen if that capacity was increased to 20 percent or higher.



Missed the WATT Global Media webinar on litter moisture management? Watch the full session on demand: <https://video.wattagnet.com/QbMk/>

### Testing elevated circulation capacity

Czarick discussed a pair of studies examining this concept. One study compared the performance of three total houses: two with fans capable of mixing about 9 percent of the air – using 18-inch, one-tenth horsepower circulation fans – and one house with fans capable of mixing about 18 percent of the air – using 24-inch, one-third horsepower circulation fans. One house with 18-inch fans maintained about 50 percent relative humidity, while the other maintained between 60 to 70 percent relative humidity. The house using the larger fans maintained about 50 percent relative humidity. Connie Mou, a poultry science graduate student at University of Georgia, assisted in the study. The study was sponsored by the US Poultry & Egg Association.

In the study, footpad lesions were monitored as a way to track the fans' effectiveness at controlling moisture at the litter level. The results showed the house with the higher capacity ventilation recorded the lowest amount of footpad lesions whereas the house with the lower circulating fan capacity and highest humidity recorded the most lesions of the highest severity.

### Promising results

A subsequent study, which studied the extremes – comparing a house with no circulation fans and one with high-volume circulation fans



## THE VACCINE FOR ALL SEASONS

From summer heat to winter frost, the ecology of a broiler house is constantly changing, which can lead to an increased coccidiosis challenge. The precocious strains of HATCHPAK® COCCI III vaccine induce optimum immunity with minimal lesions.<sup>1</sup> So, at whatever level of coccidiosis challenge, your flock can be safely protected year round.



1 Data on file.

HATCHPAK® is a registered trademark of Merial. © 2018 Merial Select, Inc. Gainesville, Georgia. All rights reserved. Merial is now part of Boehringer Ingelheim.

AV16-003A / HPC(02/17)

**PREVENTION WORKS**

Shaping the future of poultry health

# MAXIMUM POWER, ULTIMATE RELIABILITY



## Drive a Profitable House Environment with Our Long-Life, Low-Maintenance DuraDrives

The DuraDrive Curtain and Vent Machine combines power, precision and durability for accurate ventilation control.

- Sealed and lubricated for life, nylon belt and printed circuit board **maximize reliability.**
- Simple, accurate limit switches and lightweight design allow for **single-person installation.**

**G3** A Family of Versatile  
Ventilation Solutions

DiversifiedAg.com  
800.348.6663



**DIVERSIFIED**



## BROILER LITTER QUALITY

– backed up the first experiment's results. Mou was also involved in this trial. The house with the circulation fans showed more uniform litter moisture and lower overall moisture levels than the house with no fans.

Czarick said the birds were also less likely to pile up in certain areas and more likely to spread out in the house with the circulation fans compared with the house without fans.

“What it looks like now is, with our newer houses, that we can be more aggressive with the amount of air movement that we have in our houses and, because we are moving the air around, we're able to keep drier litter, be able to generate less

ammonia and the birds' health is improved,” Czarick said.

### Cost implications of switching to higher capacity fans

Making improvements like those outlined in the research will cost significantly more than the conventional circulation fan setup, Czarick said.

“What we're looking at in the future is the use of the sub-\$100 fans to mix the air, when it comes to (antibiotic-free) when we're really interested in keeping the litter dry, I think those days are numbered,” Czarick said. “I think we're going to have to be looking at fans that cost a lot more.”

While there's a range of factors

affecting the cost of the transition – including house design and roof height – he estimated the price of providing adequate circulation fan capacity could be doubled if not tripled. However, he said the bigger, high-capacity fans – the models used in his experiments cost more than \$200 each – are built to last for 15 years. Comparatively, the models used in most houses right now only last for two or three years. Replacing cheaper, lower-capacity fans with more expensive, higher-capacity models will cost a lot up front, but the cost should be comparable during the life of the new fans thanks to their superior quality. ■

INTRODUCING THE **NEW** <sup>TM</sup>

# Tru40

**A Genuine 40,000 BTU  
High Pressure Radiant Gas Brooder**

## HIGH PRESSURE WITHOUT THE FILTERS!

Visit Our Website For More Information:

**[WWW.SPACERAY.COM](http://WWW.SPACERAY.COM)**

Contact your local dealer for pricing.



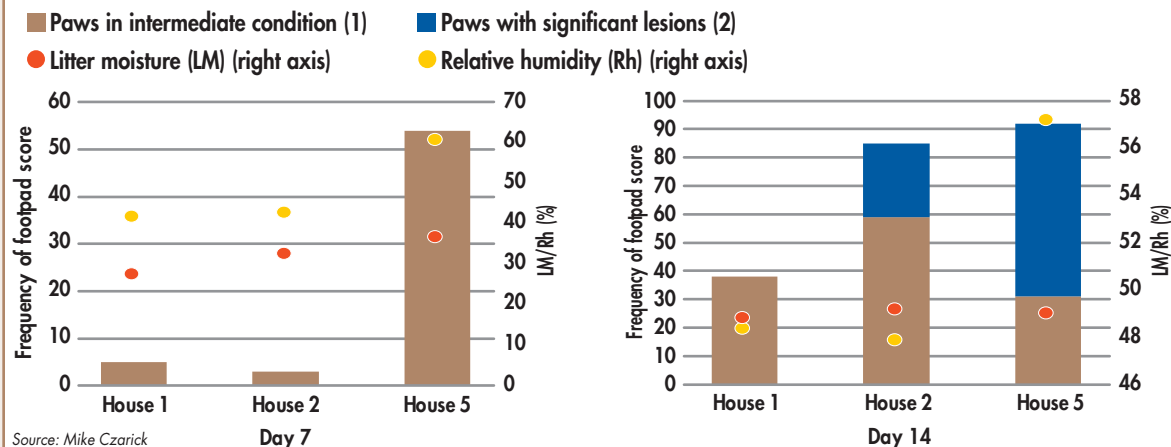
- Direct Spark Ignition (DSI)
- High Pressure Without Air Filters
- Stainless Steel Burner & Emitter
- 17.6% More Heat Input Than The Leading Competitive Model LAB TEST CONFIRMED
- Direct Replacement For Other High Pressure Brooders



## SPACE-RAY®

A Division of Gas Fired Products, Inc.

## Comparing standard circulation and high-capacity circulation



Mike Czarick's team set up an experiment comparing similar broiler houses using one-third horsepower, or high-capacity, and one-tenth horsepower, or standard capacity, circulation fans. The relative humidity (Rh), litter moisture (LM) and paw, or footpad, lesion scores were measured after 7 days and 14 days. Paw scoring was sorted by numeral values. A value of zero was assigned to totally health paws, a value of two was assigned to paws showing significant lesions and a value of one was assigned to paws in intermediate condition. The study showed birds living in the house using higher-capacity fans (House 1) exhibited healthier paws than those living in the other houses (House 2 and House 5).

## Safer Food. Our Responsibility.

Poultry growers, processors, and retailers need non-antibiotic solutions to meet today's consumer demands.

Original XPC™ works naturally with the biology of the bird to help maintain immune strength.

**A strong immune system promotes:**

- ✓ Animal health & well-being
- ✓ More efficient production
- ✓ Safer food from farm to table

Diamond V  Immune Strength for Life™



ORIGINAL  
**XPC™**

 **Diamond V®**  
The Trusted Experts In Nutrition & Health®

For more information, visit [www.diamondv.com](http://www.diamondv.com)

# Washing broiler transport cages

## - if not, why not?

Washing and drying cages improves food safety but brings new logistical challenges.

NELSON COX, ET AL.

*Campylobacter* and *Salmonella* are leading causes of human bacterial foodborne disease and are epidemiologically linked to poultry and poultry products. What is the role of the transport coops for spreading this contamination in broiler chickens?

### Reasons to consider washing

Transport cages have been demonstrated as a significant source of bacterial contamination from one flock to the next. In 2002, research showed that efforts to control *Salmonella* (and now *Campylobacter*) need to concentrate on crate cleaning and disinfection. Reasons for transport crate contamination are:

- Inadequate cleaning
- Disinfectant concentration and temperature of disinfectant
- Contaminated recycled flume water used to clean crates

In a typical commercial operation, broilers are caught on the farm and placed into cages for transport.



Filled cages are taken to the processing plant, emptied and immediately put back in service. Soiled transport coops may or may not be cleaned and sanitized between uses. Some poultry companies in the U.S. are washing cages, but – due to ongoing *Campylobacter* issues and concerns – cage washing is more common in the U.K.

### Obstacles to overcome

In the U.S., many companies not washing their transport cages may be reconsidering. The main reasons these companies aren't using cage-washing systems are the cost and logistics. Major modifications to the animal receiving and transport area would be required. Companies would need to change the style of cages used for catching and transport and install washing and sanitation equipment.

Further concerns include the cost of the chemicals to wash and sanitize cages as well as containment and treatment of cage wash runoff water. Drying washed cages can be an effective antimicrobial strategy. Some

---

N.A. Cox<sup>1</sup>, M.E. Berrang<sup>1</sup>, D.E. Cosby<sup>1</sup>, M. Robach<sup>2</sup>, J.L. Northcutt<sup>3</sup>, D.P. Smith<sup>3</sup>, C.L. Hofacre<sup>4</sup>, R.J. Meinersmann<sup>1</sup>, B.B. Oakley<sup>5</sup>, J.L. Wilson<sup>6</sup> and A. Hinton, Jr.<sup>1</sup> 1. The U.S. National Poultry Research Center; 2. Cargill; 3. Clemson University; 4. Southern Poultry Research Group, Inc.; 5. Western University of Health Sciences; 6. University of Georgia





## Cleaning broiler transport cages leads to improved food safety, yet its not widely done in the U.S.

Andy Harris, Harrison Poultry Inc.

**Read more:** Forced hot air reduces *Campylobacter* in broiler transport, [www.WATTAgNet.com/articles/29973](http://www.WATTAgNet.com/articles/29973)

## The potential costs of not washing

Each company must consider if transport cage sanitation is important enough to justify the total cost of the operation. One part of that calculation will be the potential cost of *Campylobacter* and/or *Salmonella* positive cages increasing the charges of failed regulatory tests of fully processed broiler carcasses.

In the foreseeable future, many poultry companies may find it in their best interests to wash and sanitize transport cages between uses. ■

*References available upon request.*

effective drying may be achieved on the truck during transport to the next farm.

## BROILER CONCEPT

Roxell develops, designs and manufactures livestock equipment that helps growers produce animal protein in the most cost-effective way.

- / **MiniMax** feeding system
- / **SwiiFlo** nipple drinking system
- / **Quad-Glow 100** infrared heater
- / **ProTerra** ventilation system



more to discover on [roxell.com](http://roxell.com)



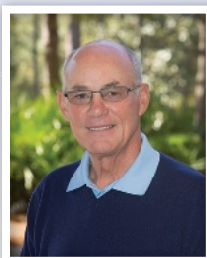
**ROXELL**®

2018

# CHICKEN MARKETING SUMMIT

## Survive and thrive in disruptive times

The dynamic agenda includes:



**Keynote speaker:**  
**Lampkin Butts, Sanderson Farms president and Chief Operating Officer**

Butts will discuss how the third-largest U.S. chicken

producer, Sanderson Farms, continually experiences growth and marketing success while staying true to a unique corporate vision and culture.



**Kelley Bailie Fechner, director, customer solutions for Datassential**

Fechner examines the role of chicken on restaurant menus. She will address

what type of safe experimentation can help chicken become a disruptor on restaurant menus.



**Bill Bishop, co-founded Brick Meets Click**

Bishop will explore how chicken marketers can better align with consumers and retailers

to successfully sell more to digitally connected shoppers.



**Meagan Nelson, associate director, fresh growth and strategy team at Nielsen**

Nelson will explore the macro and micro trends facing the chicken industry

and discuss strategies for winning in this ever-changing consumer landscape.

**Bring the family! Register now:**



**Hurry! Early  
Bird savings  
end June 1**

## **2 days of essential educational sessions:**

- Identify poultry marketplace disruptors
- React to them
- Overcome them
- Become a disruptor yourself

**PLUS:** Discounted Walt Disney World® park tickets available only for Chicken Marketing Summit attendees and their families!

# **July 22-24, 2018**

**Four Seasons Resort Orlando at Walt Disney World®  
Orlando, Florida**

Presented by



[www.ChickenMarketingSummit.com](http://www.ChickenMarketingSummit.com)





## 7 ways the turkey industry is looking to **increase demand**

The National Turkey Federation is using executive-led working groups to focus on core issues that should help build demand in the US and around the world.

AUSTIN ALONZO

The turkey industry is looking to increase demand and sales for its product through a comprehensive, seven-point plan aimed at consumers in the U.S. and abroad.

As part of the National Turkey Federation (NTF)'s annual meeting in San Diego, California, on

February 22, Gary Cooper spoke about how the industry group's turkey demand project is changing for 2018. After seeing positive results in the project's first three years, the group reflected on what it learned so far and how it could improve going forward.

The result, the Van Wert, Ohio, turkey company's chief operating officer said, is the creation of seven, executive-driven working groups of industry professionals that will focus on a key issue for the future of the protein. The groups will meet and speak regularly to advance their mission.

**THE NATIONAL TURKEY FEDERATION** continues to work on driving up demand for turkey.



# H<sub>2</sub>PAD

## Climate Control

In stock at a Georgia Poultry store near you.



[www.gapoultry.com](http://www.gapoultry.com) • 800-949-4647

## INCREASE DEMAND

# 1 Animal health products

The turkey industry, due to its size compared with the global broiler meat market among other factors, is lacking in effective treatments of certain diseases. The rollback of antibiotic growth promoters and the re-emergence of diseases once managed by antibiotics compounds this health issue.

To address this challenge, this NTF group will focus on accelerating the research and development of new animal health products needed to replace products the industry lost, or for which uses have been restricted, and to address diseases for which no fully effective treatment or prevention options are available.

Cooper said former Jennie-O Turkey Store President Glenn Leitch led the formation of the group, and in the future it will be led by Circle S Ranch President Ronnie Parker.










How healthy eating is transforming the meat case: [www.WATTAgNet.com/articles/32341](http://www.WATTAgNet.com/articles/32341)

# 2 Export

This group – led by Phil Seger, director of human resources at Farbest Foods Inc. – will work to identify and prioritize potential export markets with an opportunity to either be reopened to U.S. turkey exports or expand U.S. exports

## Top turkey export markets in 2016

	Value	Volume (metric tons)
Mexico 	\$355,426,000	174,507.20
Japan 	\$41,012,000	9,614.00
Canada 	\$24,773,000	6,044.60
Hong Kong 	\$24,215,000	13,641.60
Dominican Republic 	\$16,336,000	7,455.60
Panama 	\$11,739,000	4,087.40
Chile 	\$10,158,000	4,124.90

Source: U.S. Department of Agriculture

**Mexico is by far the largest export destination for US turkey products.**

in the near future. The NTF wants to primarily focus on ways to build support for lowering and ultimately removing barriers to unrestricted turkey exports in each country.

While turkey is a popular choice in the U.S., few other countries consume the meat in significant quantities. Turkey exports

Japan, Canada, Hong Kong and the Dominican Republic.

Cooper said NTF is focused on getting access to markets it's shut out of, and it has asked its allies at the USA Poultry & Egg Export Council to focus on that mission. For now, the industry's top export targets are Australia, China, India and countries in the Middle East.

# 3 Education

The education group, led by Aviagen Turkeys President Jihad Douglas, will focus on disseminating the NTF's agriculture curriculum to middle schools around the country. The goal of the NTF curriculum is to teach school children how to evaluate conventional agriculture's role in feeding a growing and hungry world. This group will work along-



side the National FFA Organization.

Cooper said the group wants to make sure school children aren't being influenced by teachers with a vegan agenda or taught that veganism is a preferable alternative to eating meat. The FFA will help promote the entire barnyard to this audience.

## 4 Social media/digital online

The NTF's promotional effort is already making great advances through activities on social media encouraging people to try turkey. Cooper said this group – led by Butterball LLC CEO Kerry Doughty – will build on that effort. This group will focus on creating social media and online digital campaigns aimed at maximizing public engagement. The objective is to be a leader among meat proteins.

Cooper said NTF is committed to this strategy in the long term, too. In fact, it plans on hiring a full-time staffer focused entirely on online and social media campaigns.

## 5 Institutional purchases

This group, led by Protein Alliance Inc. President Carl Wittenberg and Jennie-O Turkey Store President Steve Lykken, aims to establish a group of foodservice professionals to advise the turkey industry on ways to improve consumption of turkey in school meals.

## 6 Product innovation

Just as the chicken industry saw the chicken wing go from byproduct to hot

item, the turkey industry is looking for a new product to entice chefs and the average consumer. This group, led by Cargill Protein Ingredients

# Proper digestion provides birds with **resources** for growth

### GalliPro® Fit

From hatch to harvest, **GalliPro®** brand probiotic products support normal GI functions and the balance of gut microflora in poultry. They can be a natural, safe, sustainable part of your solution.

Visit [ah.chr-hansen.com/gallipro](http://ah.chr-hansen.com/gallipro) to find the product best suited to your needs.

CHR HANSEN

*Improving food & health*

## INCREASE DEMAND

& International Channel President John Niemann, plans on utilizing current products in the industry that could be elevated to different platforms to expand the long-term value of turkey products.

In the long term, the group wants to create an outlet for the industry to develop cuts of turkey, driving up interest in and demand for the protein. Niemann brings useful experience from working in the beef industry, Cooper said.

**7 Promotional events**  
The final group, led by Cooper, will continue to focus on live events



**Gary Cooper**

designed at getting people to try turkey, learn about its value as a food and ingredient and dispel any misinformation about the meat and the animal. This group will build on the existing efforts of the

turkey demand project and try to improve on them.

One example of a promotion done right, Cooper said, was the inclusion of turkey as a protein group at the American Royal World Series of Barbecue in Kansas City, Kansas, for the first time in its 38-year history. The event is one of the largest in the competitive barbecue circuit. During the event's four-day run, NTF's "Serve Turkey" social media accounts brought in as much traffic as they typically would over a month's time. That event should serve as a model for how the industry can spread goodwill and grow demand for its product. ■



**American Meat Science Association  
71<sup>ST</sup> RECIPROCAL MEAT CONFERENCE  
June 24–27, 2018 ~ Kansas City, Missouri**

[www.meatscience.org/rmc](http://www.meatscience.org/rmc)



*A Royal Choice ~ Discover the Rich Traditions of Kansas City*



# TRUST THE PROS.

From our technical and sales teams in the lab and at your service, to our vet team in the field and on your farm, you can trust the experts from Merck Animal Health to deliver the gold standard of performance in coccidiosis protection for broilers. Coccivac®-B52 “primes” the birds with earlier exposure of an attenuated *E. maxima*, followed by cycling of our standard maxima strain. The result? Less energy expended to develop full immunity and better bird performance.

Sustainable, economical, effective and lifelong protection. Coccivac®-B52 from the trusted pros at Merck Animal Health.



**COCCIVAC®**  
Faster protection. Superior performance. **B52**

## THE SCIENCE OF HEALTHIER ANIMALS.

© 2018 Intervet Inc. doing business as Merck Animal Health, a subsidiary of Merck & Co., Inc. All rights reserved.

US/CVB/1217/0003





# What will the broiler of the future look like?



Throughout the years, genetics developments achieved a heavier broiler with greater breast meat yield and greater feed efficiency. Will this trend continue in the future?

CINDY BURGOS ALVARADO



The broiler of 2017 is much advanced from the bird of 30 years ago, but will the bird of the future follow this trend of genetic advancement? What could change in the next eight years?

Dr. Patricio Liberona, director of veterinary services for South America's Southern Cone for Hubbard, said the broiler of the future will be more efficient, heavier, with better feed conversion and yielding more, higher-quality meat. But this doesn't mean the genetic focus will only be about developing bigger birds that grow faster. Liberona spoke on September 29, 2017, as part of the 25th Latin American Poultry Congress in Guadalajara, Mexico.

Changes in the market are already demanding birds that are slow growing, organic, ecological or raised on pasture. Liberona said the market is already paying more for this kind of chicken and this trend will only get stronger by 2025.

With both perspectives in mind, Liberona gave details of what, in his judgement, the broiler of the future will look like.



**Examples of Hubbard's premium, slower-growing broiler products.**

**Demand for premium poultry products will grow in the US in the future.** *Courtesy of Hubbard*

## Outlook for the conventional market

In the conventional market, Liberona said the bird will continue to evolve as technology advances, but only as far as the animal's genetics permit.

Showing graphics detailing the evolution of the bird up to 2016, he projected that the broiler will continue growing by about 40 grams to 50 grams per generation, in continuation of what's happened up until this point.

"How long will weight keep growing? And at what cost? The quality of the meat already has some problems," Liberona said. "We are going to have to wait and see what will happen in 2025 or develop programs that help to diminish risks."

In the future, broilers will be more efficient in terms of feed conversion. As of 2016, the genetic improvement in feed conversion is about 1.7 points per year.

"This is fantastic, but when is conversion going to be one to one? At which age? With what kind of feed? What are feed costs going to be in 2025?" Liberona asked, raising the issue of the other factors that will likely influence production.

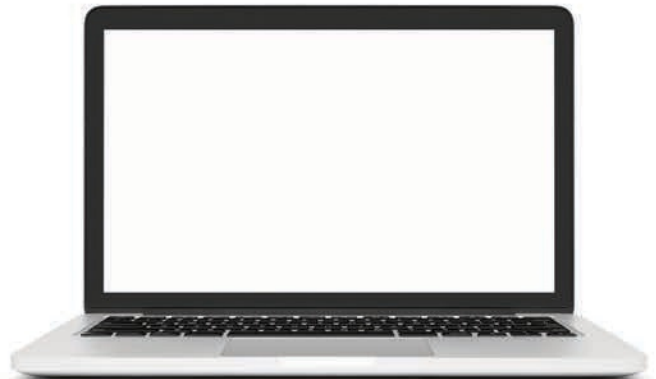
Additionally, he projected there will be greater breast meat yield in conventional birds. As of 2016, yield is increasing by about 0.27 percent to 0.42 percent each year in males and females.

"We are sure that in 2025, yield is going to be much better than it is now, but at what cost and at what risk to the physiological limits of the chicken?" Liberona said.

# Avoid Living in the Past, Take Control of Your Future



**PAST**



**PRESENT**

Contact our Key Account  
Manager:

**Dr. Josh Steed**  
at **404.576.3838** or  
**josh.steed@trouwnutrition.com**  
to learn how NutriOpt®  
may fit into your  
operation.



Feed costs are the most expensive aspect of animal production; yet, many companies rely on formulating diets with time sensitive and costly analytical methodology that often do not reflect both current and future ingredient values.

How much could that decision cost weeks later in lost performance revenue?

## **Avoid Living in the Past, Take Control of Your Future!**

Trouw Nutrition's NIR technology, "NutriOpt®", can help you gain more accurate nutritional analysis of your feed ingredients in real-time, which can translate into more precise feed formulation capabilities to maximize your profitability.

## BROILER OF THE FUTURE

**Breast meat myopathies**

Liberona brought up one of the principal problems in poultry genetics and the market's demand for quality breast meat: If breast meat yield is increasing, there's almost always going to be more myopathies.

For example, he said, the phenomenon such as green muscle, pectoral and infiltration myopathies – like woody breast – didn't exist 15 to 20 years ago.

Every kind of breast meat myopathy is somehow related to wing flapping. Because of this, Liberona projects the appearance of technologies to reduce human contact with the animals and therefore limit excessive flapping. One of these technologies, he said, is the use of automatic scales where the bird can settle down and be weighed without being touched. This avoids flapping when a worker must grab and hang the bird from a scale in order to weigh it.

On the other hand, breeder hens will also be more productive. According to data Liberona presented, the initial weight of an egg has grown between 0.8 grams to 1.2 grams per year due to genetic improvement. At the same time, the number of eggs produced is increasing by 1.3 eggs per year. For the males, Liberona projects they will continue to be fertile and that they will not need to depend on artificial insemination as turkey breeders often do.

**The growing desire for premium-branded chicken**

Along with the conventional market exists what Hubbard calls the premium market, or one that demands robustness, trustworthiness, tradition, quality and animal welfare.

This market includes the so-called organic and ecological chickens, birds grown in a setting with greater freedom and

**Conventional broiler breeds will continue making genetic progress, but there may be a limit to improvements.**

*Courtesy of Hubbard*



**Learn more: Reducing woody breast: latest broiler nutritional research, [www.WATTAgNet.com/articles/31780](http://www.WATTAgNet.com/articles/31780)**

*Dr. Abit Moray, Auburn University*

birds grown more slowly than conventional broilers. Market demand for this sector will grow between now and 2025.

“The most important country for this is really the United States, because of its volume of demand,” Liberona said. “In the U.S., there's already great enough expectation from the market and important companies are interested in having a slower-growing bird. It's a contradiction and all that, but the market is asking for slower growth.”

In this line, the chicken has a lower fat content because of being raised in pastures and they don't develop the same problems as fast-growing broilers like ascites, sudden death, legs that cannot support their growth and calcification.

**Two markets for premium**

Liberona said the premium chicken line appeals to two markets. The first is the market for gourmet meat, which exists mainly in Europe but is growing in the U.S. This gourmet market is defined by denominations like Label Rouge, humane certified, organic or pasture raised. The second market is that which wishes to have a dual-purpose bird, or a backyard bird. The dual-purpose bird produces males which are grown for meat and females which are kept for egg production. This type of bird is important for markets in Asia and Latin America.

For this market, Hubbard developed 21 lines of males of different colors and growth potential. Of these, seven are slow growing, 11 are intermediate and three are fast growing. These can be mated with seven lines of females with distinct production and growth potentials too.

Another important difference in this market is that the birds are more expensive to produce because they do not have the same feed conversion as the birds in the conventional market and are only available for niche markets or for buyers in certain countries. ■





# POULTRY TECH SUMMIT

## Unveiling Advanced Technologies for Future Poultry Operations

**Register now for Early Bird savings!**

**November 5-7, 2018**

**Georgia Tech Hotel & Conference Center, Atlanta, Georgia**

**A NEW ONE-OF-A-KIND** event connecting researchers and entrepreneurs with poultry sector technology experts, financiers, bankers and venture capitalists looking for new projects to fund.

**Learn about advanced developments for poultry in:**

- Artificial Intelligence
- Blockchain
- Virtual Reality
- Robotics
- Sensors
- Vaccines and more!

**Space is limited! Register today: [www.PoultryTechSummit.com](http://www.PoultryTechSummit.com)**

Presented by



In collaboration with:



Department of Poultry Science  
College of Agricultural & Environmental Sciences  
**UNIVERSITY OF GEORGIA**



With support from:



# 9 disruptive technologies coming to the poultry industry

Technology will change the way the international poultry industry does business. The only question is how soon it will happen.

AUSTIN ALONZO

Disruption of long-established business models is the definitive trend in the recent history of the global economy. The poultry industry, along with the rest of international agriculture, may be the next field to be shaken by disruptive technologies and entrepreneurs.

On January 31, 2018, as part of the 2018 International Production & Processing Expo in Atlanta, Aidan Connolly, chief innovation officer and vice president of corporate accounts for Alltech, analyzed nine technological forces that will likely shake the poultry industry in the near future. Connolly cautioned the industry leaders present to not ignore technological innovations, lest they find themselves on the outside looking in.

The poultry industry's biggest deficiency, he said, is the lack of data collection and data use. If farmers and processors had greater access to information, like feed consumption or individual bird weight, it could be incredibly useful in improving production efficiency. This will become critically important as farmers are challenged to feed a booming global population.

## 9 technological forces that could shape the future of the industry

- **3-D printing:** Three-dimensional printing is already dropping in price and increasing in accessibility and will likely soon see applications on the farm and inside the household. On the farm, 3-D printing could help extend the lives of valuable breeding stock by printing replacement appendages – like feet – and help minimize production losses by saving valuable animals. In the home, 3-D printers capable of making simple foods are already available at increasingly affordable prices. Connolly asked if soluble proteins could one day be available to print protein-rich foods at home.
- **Robots:** Robotics will find increasing application on the farm and in processing. Already, a French company, Octopus Robots, is producing and selling robots designed to work in the poultry house. Robots bring the benefit of reduced biosecurity risk – they don't leave the farm, so they can't carry diseases into the house from elsewhere – higher resistance







## NOVEL TECHNOLOGIES ALLOWING FARMERS to collect and use key data about their animals and their housing will transform the poultry industry in the near future.

to environmental and health risks inside poultry houses and the ability to do jobs humans don't want to do or can't do. In processing, robotics are seeing increased application in replacing human labor as machine vision and machine learning technology becomes more sophisticated. Soon, robotics could even be used in the supply chain to stock, sell and deliver food to consumers.

- **Drones:** In the poultry industry, drones could see use in monitoring and collecting data in ways that humans cannot. The highest potential may be in organic and free-range poultry farming, as they can watch the flock, scare away predators and herd birds back into the house when needed.
- **Sensors:** Sensors bring a wide range of possible

uses and the ability to collect data in ways not previously possible. Connolly said sensors may be the first disruptive technology to see widespread use in the poultry industry. Possible applications include monitoring body temperature and bird stress levels. Observing these metrics could lead to better productivity and higher animal welfare.

- **Artificial intelligence (AI):** Rapid developments in artificial intelligence are already making headlines around the world and attracting investments from leading businesses. In the poultry industry, the technology could see application in the form of machine vision used to observe houses or improve mechanical meat processing. AI algorithms are becoming sophisticated enough, Connolly said, that machine



## 9 DISRUPTIVE TECHNOLOGIES

vision is capable of accurately tracking the individual body-weights of as many as 50,000 birds raised in the same house.



THE EXPERTS IN INNOVATIVE FOOD PROCESSING MACHINERY

## NEW SCREEN INNOVATIONS

## SANITARY ZERO MAINTENANCE SCREEN

- The most sanitary and lowest maintenance screen in the industry
- Clean-in-Place system reduces labor and stops blinding
- Rapid filter change options



Lyco Manufacturing, Inc.  
115 Commercial Drive  
Columbus, WI 53925

920-623-4152

[www.LycoMFG.com](http://www.LycoMFG.com)

■ **Augmented reality (AR):** The human eye can only see so much, and augmented reality offers farmers the chance to see the full light spectrum the bird sees in the house. Additionally, the technology can help farmers visualize data collected by sensors in real time as they are going about their day-to-day business on the farm. More consumer-facing AR applications, allowing

solve one of agriculture's biggest problems. It shows people – working in the supply chain and in the grocery store – where the bird came from, how it was fed and raised and how it was processed. For accounting purposes, all transactions create a virtual invoice creating a virtual ledger that all parties can see in real time. Walmart is already using blockchain technology in China



Robotics in poultry production to transform sector: [www.WATTAgNet.com/articles/32563](http://www.WATTAgNet.com/articles/32563)

Mark Clements

for increased transparency and a more interactive experience with the product on store shelves, are already arriving on the market.

■ **Virtual reality (VR):** VR is being used to show on-farm conditions to consumers who are increasingly disconnected from farming. In the United Kingdom, McDonald's Corp. is deploying VR headsets, allowing their customers to see what exactly the farms supplying their food look like.

■ **Blockchain:** Connolly called blockchain potentially the most transformative technology for agriculture. The distributed ledger technology called blockchain enables greater transparency in the food supply and could potentially

and is bringing it back to the U.S. He predicted it will be a massive part of the food industry's future and the changes it drives will come quickly.

■ **The Internet of Things:** At the foundation of all of these developments lies the so-called Internet of Things (IOT). The IOT is the growing web of connectivity created by the proliferation of internet connectivity in every day devices and objects. By attaching sensors and other means of collecting and sharing data, the IOT represents a rich potential for data collection and data analysis. Connolly said IOT technology allows farmers to have as much information as possible. ■

# FeedStrategy

Animal feed solutions for a growing world



## JOIN MORE THAN 20,000 ANIMAL FEED PROFESSIONALS

Subscribe now to **Feed Strategy**, a unique new monthly publication.

### The NEW animal feed processing resource for navigating today's consumer-driven protein production

A growing worldwide population combined with a consumer demand for increased transparency is quickly transforming the animal feed industry from being commodity based to one which **connects feed to farms to consumers**.

**Feed Strategy** is uniquely positioned to address critical nutrition, health and manufacturing issues impacting livestock and poultry diets on a global scale aimed at driving best outcomes across sustainability, food safety and farm profitability.

Top **Feed Strategy** features will include:

- » Expert editorial coverage including analysis of industry trends and practical nutrition solutions
- » Exclusive insights on the latest in feed manufacturing technologies
- » Special annual reports including the highly popular World Feed Panorama, Top Global Feed Companies, Nutrition and Feed Survey and more

**Don't miss an issue, subscribe today! Go to: [www.wattagnet.com/FSsubscribe](http://www.wattagnet.com/FSsubscribe)**



[www.WATTGlobalMedia.com](http://www.WATTGlobalMedia.com)

# Wayne Farms' sustainable poultry wastewater solution

Wayne Farms' Pendergrass, Georgia, facility switched to a more effective wastewater system, resulting in better performance.

JOHN PIERSON

Few outside the industry use technical innovation and poultry processing in the same sentence. Yet Wayne Farms' Pendergrass, Georgia, operation is at the forefront of solving the challenges of reclaiming treated poultry processing water. Because of this, the facility received a 2017 U.S. Poultry & Egg Association Clean Water Award Honorable Mention for the full treatment category.

Wayne Farms Pendergrass processes 130,000 large birds

per day using a permitted daily average of 800,000 gallons of water. The facility is one of nine fresh poultry plants operated by Wayne Farms, the seventh-largest vertically integrated poultry company in the U.S, according to WATT PoultryUSA's Top Broiler Company rankings. Wayne Farms prides itself on supporting its customers with innovation, food safety and the highest product quality. Now, Wayne Farms Pendergrass is innovating water reclamation.

## The transition in the treatment process

The facility operated a land application system (LAS) designed with fodder crops covering adjacent acreage soils to percolate, absorb and promote natural bacteriological processes to clean the pretreated wastewater. LAS depends on an environmental buffer to achieve indirect potable reuse.

About one decade earlier, Wayne Farms Pendergrass faced severe water restrictions during drought conditions. Neither the current groundwater withdrawal permits nor LAS treatment support any future production increases. In response, leadership committed to major upgrades that would produce water acceptable for reuse in non-contact areas while laying the groundwork for future broader water supply innovations.

The facility enhanced its biological treatment system by replacing the LAS with a membrane bioreactor system (MBR) and ultraviolet light (UV) disinfection. Installed ultrafilters separate treated water from the activated sludge biomass.



**Cascading aeration transporting ultra-filtered and UV-disinfected treated wastewater to discharge.** John Pierson





**Jesse Scott and David Parks stand in front of membrane bioreactor ultrafilters.** *John Pierson*

Enhanced phosphorus precipitation, denitrification and biomass storage occur with the reconfigured existing lagoons. More importantly, Wayne Farms Pendergrass applied for, and received, a National Pollutant Discharge Elimination System permit from the state of Georgia's Environmental Protection Division for direct discharge to Allen Creek, a tributary to the Middle Oconee River watershed listed as an impaired stream.

"We upgraded the wastewater treatment system including an offal area surge tank to tackle the overflows," said David Parks, Wayne Farms Pendergrass facility wastewater manager. "Now we manage offal and do a better job with that overall flow equalization (EQ) storage."

During the offal area upgrades,

Parks and his team still had to address the unexpected impacts on the wastewater system.

"While all that was going on, we got more efficient at running our DAF and managing our existing but limited EQ basin," Parks said.

The team also learned a lot during the system startup.

"Some water quality parameters, like scale from hard water, matter a lot more with membranes," Parks said. "We benefited from upgrading the existing system, but we had to address both debris in the sequencing batch reactor tank we now use for the aerobic biological tank and out in the lagoons."

## Using best practices

Wayne Farms Pendergrass Crew Leader Jesse Scott said the startup reinforced the idea that attention to detail and preventative maintenance are critical. But he said the overall system performs well given the variability of the incoming wastewater and limited EQ storage. Scott said effectively operating the dissolved air flotation (DAF) and the biological portion of the system is still the important part of ensuring the membranes remain effective.

As a result, the new MBR and UV treatment coupled with other upgrades at Wayne Farms Pendergrass yielded a

permitted discharge with non-detectable levels for pathogens and overall water quality greater than the previously land applied method.

Jeff Carroll, corporate environmental manager for Wayne Farms Pendergrass, said the facility now reuses about 95,000 gallons per day of ultra-filtered wastewater for pump seals, offal solids transport and screens.

## Community service

Wayne Farms Pendergrass and its employees are active and focused on regular community service. Moving forward, leadership sees its efforts to assure its groundwater resource sustainability, and a secure water supply based on its



**Read more:** Transforming poultry wastewater into renewable resources, [www.WATTAgNet.com/articles/32216](http://www.WATTAgNet.com/articles/32216)

innovative wastewater system, as a long-term way to give back to the community while maintaining the 88-acre LAS as a wildlife habitat.

Wayne Farms Pendergrass envisions a path forward possibly including direct potable reuse (DPR) for more sustainable water reuse. While science, technical and policy considerations regarding DPR remain, Wayne Farms Pendergrass committed to minimizing its potable water footprint through conservation and safe water reuse. ■

*John Pierson is principal research engineer at the Agricultural Technology Research Program at the Georgia Tech Research Institute. Contact [john.pierson@gtri.gatech.edu](mailto:john.pierson@gtri.gatech.edu).*

# New model to improve broiler production sustainability

A new tool for poultry producers aims to further the industry's improvements in minimizing its environmental impact.

ALYSSA CONWAY

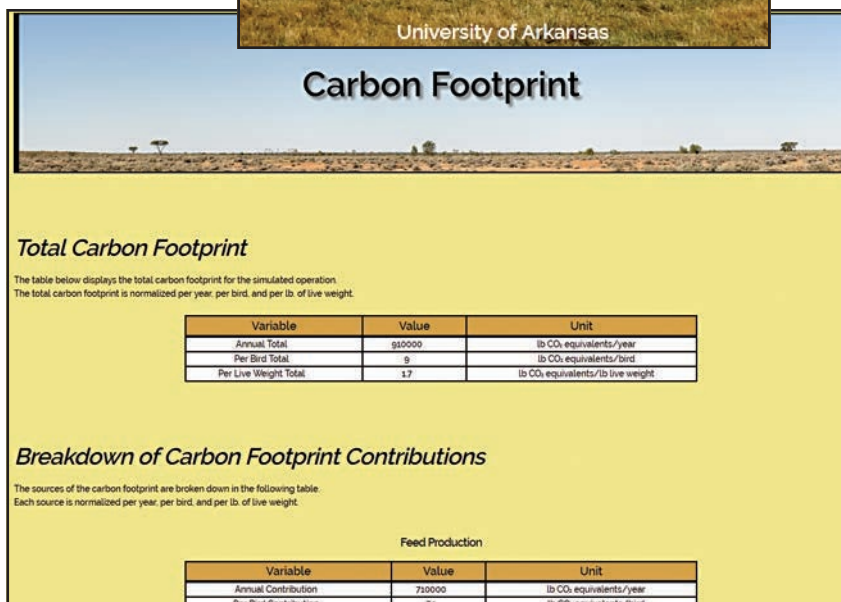
In the past 50 years, the broiler industry made serious improvements in bird performance and reduction of its environmental impact, but sustainability will become a greater challenge in the near future.

A new model being developed for the poultry industry aims to help producers estimate their environmental footprint in order to further enhance the sustainability of poultry production. Dr. Greg Thoma, a chemical engineering professor at the University of Arkansas' College of Engineering, and Martin Christie, a graduate research assistant at Arkansas' College of Engineering, previewed the new broiler production model during the Animal Ag Sustainability Summit at the 2018 International Production & Processing Expo on January 30, 2018.

A comparative life cycle assessment of U.S. broiler production for the years 1965 and 2010 shows the industry's improvement and how much sustainability metrics have improved over time.

## Historic sustainability improvements

Thoma pointed to several industry improvements from 1965 to 2010:



**The Poultry Calculator tool helps farmers better understand the environmental impact of their operations.** Martin Christie, Greg Thoma

WATT

# POULTRY Update



## THE MOST IMPORTANT POULTRY INDUSTRY NEWS DELIVERED TO YOUR INBOX FIVE DAYS A WEEK



**SIGN UP TODAY**

- Respected industry information
- Breaking news
- Mobile-friendly format

An ideal resource for global poultry growers, producers, integrators and others allied to the market.

Sign up today at:

[www.WATTAgNet.com/NewsletterListing.aspx](http://www.WATTAgNet.com/NewsletterListing.aspx)

**WATT** GLOBAL  
MEDIA



## BROILER PRODUCTION SUSTAINABILITY

- Production length shortened from 66 days to 47 days
- Market weight increased from 1.6 kilograms to 2.59 kilograms
- Feed conversion improved from 2.44 kg feed/kg live weight to 1.94 kg feed/kg live weight
- Mortality reduced from 6 percent to 4 percent

The industry's greatest relative improvement, Thoma said, is in the non-carcinogenic impact associated with particulate matter. The area of least improvement is eutrophication, or the enrichment of a water body with an excessive amount of nutrients by way of runoff.

"We eat a lot more chicken than we did in 1960, which is a good thing for the industry," Thoma said. "It comes with some impacts but those impacts are significantly smaller than they might have been otherwise without the tremendous improvements over time that we've seen."

"We need to understand at a more granular level what's really going on," he said, adding that this is one of the driving factors for developing the new Poultry Calculator.

### How the Poultry Calculator works

Thoma and Christie explained how this new Poultry Calculator will work to help the industry measure and reduce its impact on the environment.



**Dr. Greg Thoma, University of Arkansas.** *Alyssa Conway*

operations and see where the greatest need to reduce their environmental footprint exists. Development of the calculator is being funded by the US Poultry & Egg Association.

### The calculator is set with three different simulation submodels:

- **Barn:** This submodel simulates the operations in different types of barns and allows the user to keep track of the resources used in each facility to maintain the optimal growth environment.
- **Broiler:** This submodel simulates different broiler strains, allowing the user to track the feed and water required for broilers to reach their genetic potential.
- **Environmental impacts:** This submodel simulates the farm's global warming potential, water depletion and land occupation.

The calculator's outputs include broiler performance, feed conversion ratio, average daily gain, total feed intake per bird and per year, ingredient breakdown, litter and composition of gases, mortality, resource consumption and environmental impacts. ■



Sustainable poultry production driving industry advances:  
[www.WATTAgNet.com/articles/31349](http://www.WATTAgNet.com/articles/31349)

The browser-based interface allows the farmer to input the specific data about their farm, such as facility information, weather data for the farm's county, broiler breeds, starting weights and target finishing weights, and more. The formula then calculates bird performance under the specific barn conditions and also allows for "what if" scenarios, giving producers and integrators a useful tool to assess their own

## » PRODUCT REVIEW



### DS SMITH GREENCOAT BOX PACKAGING

DS Smith offers Greencoat, a recyclable, box packaging solution that replaces wax-coated boxes. The boxes can be used in the poultry industry, as well as for packaging other cold and wet products.

[www.dssmith.com](http://www.dssmith.com)



### LYCO MANUFACTURING SANITARY ZERO MAINTENANCE SCREEN

The Sanitary Zero Maintenance Screen from Lyco Manufacturing is a sanitary rotary drum screen, which can filter up to 400 gallons of water per minute for reuse. It is a solution to wastewater discharge as it filters wastewater and reclaims it for new uses back in the food processing systems.

[www.lycomfg.com](http://www.lycomfg.com)



### AVIAGEN ROWAN RANGE GUIDES FOR OPTIMAL MANAGEMENT

Aviagen presents the Rowan Range Guides for Optimal Management, a series of comprehensive management documents for slower-growing and colored Rowan Range birds.

[www.aviagen.com](http://www.aviagen.com)

### DRAMM MOMENTUM-BASED AIR FLOW WHITE PAPER

Dramm offers its last white paper: "Momentum-Based Air Flow for Optimized Growth." This paper explores proper air movement in the greenhouse and indoor growing facilities. Beyond just heat distribution, good air flow will homogenize temperature, humidity and carbene dioxide for even growth throughout the growing area.

[www.dramm.com](http://www.dramm.com)

Brought to you by

**WALINGA**  
ENGINEERED TRANSPORTATION EQUIPMENT

## SIDERoads

### Engineered Transportation Efficiency

This digital publication provides practical insights and solutions in feed transportation. Explore real-world perspectives from your feed industry peers as they share how their companies are innovating for success.

**Subscribe now to receive your complimentary digital copy!**  
[www.WATTAgNet.com/SRsubscribe](http://www.WATTAgNet.com/SRsubscribe)

## » PRODUCT REVIEW



### SEALED AIR CRYOVAC WHOLE BIRD AUTOMATION SYSTEMS

Sealed Air Cryovac Whole Bird Automation Systems automate the most labor-intensive tasks of packaging whole poultry such as hock breaking, bag loading and vacuum sealing. System components include the Cryovac HBX Series Hockbreaker, the Cryovac BL220 Automatic Bag Loader, the Cryovac 8600E Series Rotary Chamber Vacuum System and the Cryovac ST101 Shrink Tunnel. By integrating these four pieces of equipment with a proprietary shackle line and conveyor system, Cryovac Whole Bird Automation Systems allow one operator to package an average of 45 birds per minute.

[www.cryovac.com](http://www.cryovac.com)



### MUNTERS PLATINUM TOUCH CLIMATE CONTROLLER

The Platinum Touch is a controller based on the Platinum Pro, Munters' most advanced climate controller. It enables simple management of poultry and animal houses, including large-scale industrial operations.

[www.munters.com](http://www.munters.com)



### GEORGIA POULTRY EQUIPMENT ADULT TURKEY FEEDER

The Georgia Poultry Equipment Adult Turkey feeder is designed for easy feeder replacement and installation. It is part of the GrowerSELECT turkey feed line and it features a removable, two-piece top that aids easy installation and replacement.

[www.gapoultry.com](http://www.gapoultry.com)

Find more agriculture products at: [www.WATTAgNet.com/directories/290-agriculture-products](http://www.WATTAgNet.com/directories/290-agriculture-products)



## THE BARN BLOWER



SAVES LABOR, TIME & EFFORT • 360° NOZZLE ROTATION • PTO • HYDRAULIC

(716) 592-2700 • [BuffaloTurbine.com](http://BuffaloTurbine.com) • Made in USA

"ONE OF THE MOST  
VALUABLE TOOLS I HAVE.  
A TWO OR THREE DAY JOB  
NOW REDUCED TO  
THREE OR FOUR HOURS."

-JIM F., POULTRY FARMER





## » MARKET PLACE

### » ADDITIVES

www.eurofeed.it

**EUROFEED**  
technologies S.p.A.

**ZEROGERM**

Acts against **pathogenic microorganisms & viruses** exploiting the direct action of heat obtained following a slow combustion.

A Powerful Sanitizing and Disinfectant in tablet form (700g each)

The strong and lasting **bactericidal power**, the rapid & simple application, the harmlessness proven for most of the materials and the versatility against microorganisms make the **ZEROGERM** an excellent bactericidal for use in environments where work is required for disinfection and in healthcare prevention of all infectious diseases.

GMP+

### » INGREDIENTS

**FLY PROBLEMS?**

Got Manure: We have the cure!  
Biological Fly Management Program  
Entomologist/Consultation Available

**kunafin**  
"The Insectary"  
Worldwide

Phone: 1-800-832-1113  
Fax: 1-830-757-1468

Made in U.S.A.

[www.kunafin.com](http://www.kunafin.com)

For more information about Marketplace advertising, contact Arthur Hartnett, Phone: 815.966.5405; E-mail: [ahartnett@wattglobal.com](mailto:ahartnett@wattglobal.com). Rates are \$280 per column inch (1x), \$260 (6x), or \$240 (12x). Ad production is included at no additional cost.

### » EMPLOYMENT

**AGRI-associates®**  
AMERICA'S AGRIBUSINESS RECRUITERS/CONSULTANTS

**CAREER OPPORTUNITIES** in  
poultry and egg processing, live production, sales, QA,  
maintenance, accounting, etc. All information confidential.

Mike Deal  
AGRI-associates  
5665 Atlanta Hwy, Suite 103-311  
Alpharetta, GA 30004-3932  
770-475-2201 Fax: 770-475-1136  
1-800-562-1590  
[mtd\\_agri@bellsouth.net](mailto:mtd_agri@bellsouth.net) • [www.agriassociates-ga.com](http://www.agriassociates-ga.com)

### » SERVICES

**USDA LABEL APPROVALS**  
**GOVERNMENT LIAISON-TRADEMARK SEARCHES**

Any government matter quickly handled on the spot.  
Trademark searches 48 hours \$185. Hurson Associates,  
200 N. Glebe Rd., Ste. 321, Arlington, VA 22203, [www.hurson.com](http://www.hurson.com), 703-524-8200.

**TOLL FREE: 1-800-642-6564**

### » EQUIPMENT

**LVI**

**ROOSTER THUNDER SWEEPER**

Complete with attached hydraulic hoses and couplers including required case drain line  
Remote auto-adjust for ease of operation  
6" diameter discharge with air speeds up to 200 mph and 4200 rpm

**Deluxe**

- Convert your litter into pathogen-free compost
- The LVI Deluxe Windrower pulverizes the cake in the litter with dual auger and pulverizing action
- Reduce disease in litter and darkling beetle mortality rate

Includes Exclusive Built-On Side Shift & Tilt Feature

Learn more about LVI at [www.lvimfg.com](http://www.lvimfg.com)

## » AD INDEX

American Feed Industry Assn.....	4
American Meat Science Assn.....	30
Boehringer Ingelheim USA.....	18
Buffalo Turbine .....	46
Chr Hansen A S.....	29
Cumberland Div of GSI Group .....	8-9
Diamond V.....	21
Diversified Agriculture, LLC .....	19
Elanco Animal Health .....	C2
Evonik Corp.....	17
Gas-Fired Prods Inc/Space Ray .....	20
Georgia Poultry Equipment Co .....	27, C4
Kemin Industries.....	10
Lubing Systems LP .....	5
LVI Litter Processors .....	47
lyco Mfg Co .....	38
Merck Animal Health/USA .....	13, 31
Meyhen Intl Corp .....	C3
MGK Insect Control .....	7
Neogen .....	11
Novus International Inc .....	12
Roxell USA .....	23
Trouw Nutrition USA.....	33
Vetagro Inc.....	3
Walinga Inc .....	45

## MARKETING AND SALES TEAM

### USA-BASED SALES STAFF



**Steve Akins**, Executive Vice-President/  
Publisher Global Petfood and Events  
[sakins@wattglobal.com](mailto:sakins@wattglobal.com); Phone +1.919.387.7961



**Jeff Miller**, Director of Global Agribusiness Sales  
[jmiller@wattglobal.com](mailto:jmiller@wattglobal.com); Phone +1.815.966.5582



**Pam Ballard**, USA Regional Sales Manager:  
Midwest, West, Canada  
[pballard@wattglobal.com](mailto:pballard@wattglobal.com); Phone +1.815.966.5576  
Fax +1.815.968.0941



**Mary Harris**, USA Regional Sales Manager:  
East, Southeast  
[mharris@wattglobal.com](mailto:mharris@wattglobal.com); Phone +1.815.980.5938  
Fax +1.847.908.7551



**Arthur Hartnett**, USA Sales Representative  
[ahartnett@wattglobal.com](mailto:ahartnett@wattglobal.com); Phone +1.815.966.5405

### WORLD-BASED SALES STAFF



**Frans Willem van Beemen**, Regional Sales Manager  
[fvanbeemen@wattglobal.com](mailto:fvanbeemen@wattglobal.com);  
Phone +31.344.653442; Fax +31.344.653261



**Tineke van Spanje**, Regional Sales Manager for Latin  
America and Europe  
[tvanspanje@wattglobal.com](mailto:tvanspanje@wattglobal.com); Phone +31.495.526155  
Fax +31.495.525126



**Dingding Li**, Regional Sales Manager: Southeast Asia,  
Hong Kong and Taiwan  
[dingdingli@vip.163.com](mailto:dingdingli@vip.163.com); Phone +86.21.6447.4625  
Fax +86.21.6447.7022

**SUBSCRIPTIONS:** [www.WATTAgNet.com](http://www.WATTAgNet.com) or Contact customer service at +1.800.869.6882 or +1.763.746.2792. Business and occupation information must accompany each subscription order. Single copy price US\$14.00 unless otherwise marked. Change of address: Give both old and new address when reporting change of address to [WPQU@KMPSGROUP.COM](mailto:WPQU@KMPSGROUP.COM) or fax to +1.866.658.6156

© Copyright 2018 WATT Global Media. All rights reserved.

### ELECTRONIC SERVICE REQUESTED

Volume 19, Number 5. **WATT PoultryUSA** (ISSN 1529-1677) is published monthly by WATT Global Media, 401 East State Street, 3rd floor, Rockford, IL 61104 USA. All rights reserved. Reproduction in whole or in part without written permission from the publisher is strictly prohibited. WATT PoultryUSA and its logo are registered trademarks of WATT Global Media.

**POSTMASTER:** Please send change of address to **WATT PoultryUSA**, PO Box 47706, Plymouth, Minnesota 55447. Periodicals postage paid at Rockford, Illinois, USA and additional post offices. Canada Post International Publication Mail Product 0485780.





# PICKING SO PERFECT, IT'S MONEY IN YOUR HAND



There's a reason Duram is the top selling picking finger. Our quality materials and innovative design improve longevity and reduce costs. And our same-day shipping and consultative approach quickly get you the ideal fingers for your conditions.

Duram—still good to the last feather.



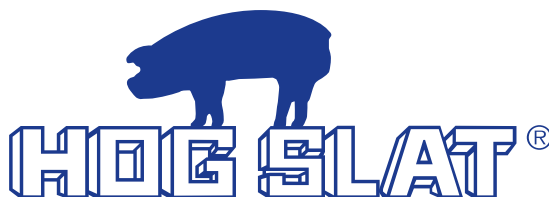
US DISTRIBUTOR of DURAM PICKING FINGERS • [MeyhenFingers.com](http://MeyhenFingers.com) • [info@meyhenfingers.com](mailto:info@meyhenfingers.com) • 800.348.6663



# END THE WARRANTY BLAME GAME



There's no warranty "blame game" between a dealer and the manufacturer with GrowerSELECT's extended 2-year warranty. We manufacture GrowerSELECT feeding and ventilation equipment and distribute it through our network of over 80 local stores. We handle your problems fast with no finger pointing. Give us a call today for a quote on your next project.



[www.gapoultry.com](http://www.gapoultry.com) • 800-949-4647