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

UGA Poultry Nutrition Newsletter

May, 2024

Poultry News

April 2024 Business Update: What's new in the world of poultry? (Poultry World)
- The summary of the latest business updates from the global poultry industry

CDC warns of Salmonella outbreaks linked to backyard poultry flocks (CDC)
- Public health officials are investigating multistate outbreaks of Salmonella linked to contact with backyard poultry.109 people from 29 states have gotten sick from Salmonella. 33 people have been hospitalized, and no deaths have been reported. 43% of the people infected with Salmonella are under 5 years old.

Brazilian poultry sector loses millions following climate catastrophe (Poultry World)
- To date, 1.2 million dead birds due to floods, equating to losses of €35 million ($38 M), and 20 poultry houses were also damaged during the flood.

Australia reports first cases of avian influenza (WATT Poultry)

- Avian influenza has reached Australia for the first time, with reports of infections in both an egg laying operation and a human. Both instances were reported in the state of Victoria.

Governor DeSantis Signs Legislation to Keep Lab-Grown Meat Out of Florida
- Governor Ron DeSantis signed SB 1084 to prohibit the sale of lab-grown meat in the state of Florida. Florida is taking action to stop the World Economic Forum's goal of forcing the world to eat lab-grown meat and insects

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UGA Poultry Researcher Highlight

Dr. Kristen Navara is a professor of stress and reproductive endocrinology in the Department of Poultry Science. Her focus is understanding how stress-induced hormones in hens and roosters permanently program physiological and behavioral traits in the chicks they produce. She and her lab have found that, when male and female birds are stressed, they increase levels of the stress hormone, corticosterone, in the eggs and semen they produce. These elevations impact the sexes of the chicks and can also affect how those chicks respond to immune challenges. Her ultimate goal is to use this information to produce better quality chicks of the desired sex by altering maternal and paternal experiences.

Read more:
Article 1 ; Article 2; News Article

Contact Navara's Lab

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CHEN Lab

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Feedback

The University of Georgia | 120 D.W. Brooks Drive | ATHENS, GA 30602 US

Eggsplore Poultry Events

June

FSMA PCQI Training | Nashville TN | 4-6
Feed Industry Institute | Minneapolis MN | 17-20
Avian Academy Teacher Education Program | Athens GA | 17-20
Southeast Egg Industry Regional Conference | Asheville NC | 18-20
European Poultry Conference | Valencia Spain | 24-28
Financial Management Seminar | Marco Island FL | 26-28

July

Hatchery Breeder Clinic | Nashville TN | 9-10
AAAP Annual Meeting | St Lous MO | 9-11
SC Poultry Federation Annual Conference | Isle of Palms SC | 11-14
14th International Symposium on Makerk's Disease and Avian Herpesviruses | St Lous MO | 12-14
Poultry Science Association Annual Meeting | Louisville KY | 15-18
Texas Poultry Federation Annual Convention | San Antonio TX | 18-20
Chicken Marketing Summit | Birmingham AL | 29-31

August

National Safety Conference for the Poultry Industry | Destin FL | 19-21
Women's Leadership Conference | Destin FL | 22-23
Arkansas Nutrition Conference | Rogers AR | 27-29

September

Poultry Sustainability and Welfare Summit | Atlanta GA | 3-6
Liquid Feed Symposium | Salt Lake City UT | 10-12
Shell Egg Academy | West Lafayette IN | 10-12
California Poultry Federation Annual Conference | Monterey CA | 12-13
NPFDA 2024 Fall Meeting | Tucson AR | 15-18
NTF Leadership Conference | Washington DC | 16-18
Environmental Management Seminar | Destin FL | 19-20
UGA Layers Conference | Athens GA | 23
UGA Broiler Conference | Athens GA | 25
59th National Meeting on Poultry Health, Processing, and Live Production | Ocean City MD | 30-2
International Avian Influenza and One Health Emerging Issues Summit | Fayetteville AR | 30-3

October

Live Production, Welfare & Biosecurity Seminar | Nashville TN | 3-4
Georgia National Fair | Perry GA | 3-13
Poultry Symposium for Production & Processing | Rogers AR | 7-10
Poultry Protein & Fat Seminar | Nashville TN | 16-17
International Conference on Poultry Science | Lisbon Portugal | 28-29

November

National Breeders Roundtable | Nashville TN | 5-7
Symposium on Gut Health in Production of Food Animals | St Louis MO | 10 - 13
Cold Weather workshop | Athens GA | 18-20

2025 - January

International Production and Processing Expo | Atlanta GA | 28-30
International Poultry Short Course | Athens GA | TBD
AFIA Feed Education Program | Atlanta GA | TBD
Feed Your ESG: How Will Help Hit Sustainability Targets | Atlanta GA | TBD
NPFDA Annual Convention and Showcase | Atlanta GA | 27-30

February

NTF Annual Convection | Scottsdale AR | 19-22

March

Annual Meat Conference | Orlando FL | 24-26
Alumni & Friends Reception | Tifon GA | TBD
Deep South Poultry Conference | Tifon GA | TBD

April

UGA Hatchery Workshop | Athens GA | TBD
UGA Hot Weather Workshop | Athens GA | TBD
West Poultry Disease Conference | TBD | TBD
North Central Avian Disease Conferences | TBD | TBD
Workforce Success and Engagement Conference | Destin FL | 16-18
PEAK | Minneapolis MN | 8-10
8th International Conference on Poultry Intestinal Health | TBD | TBD
AFGA Nutririon Seminar | Huntsville AL | 22-24

May

Precision Poultry Seminar | Virtual | TBD
Stakeholders Summit | TBD | TBD
International Poultry Congress | TBD | TBD
International Avian Respiratory Disease Conference | TBD | TBD
Poultry Health Management School | Ames IA | TBD
Poultry Processor Workshop | Nashville TN | 13-14

TBD

Poultry Tech Summit | TBD | TBD (2025)
Food Animal Innovation Summit | Raleigh NC | TBD
European Symposium on Poultry Nutrtion | TBD | TBD (2025)

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CHEN Lab

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2024 MAY

In this issue, you will read research summaries from
7 Broilers studies
3 Layer, 1 Quail, 2 Duck studies
3 Literature reviews
from 15 research institutes in 10 countries

POULTRY NUTRITION RESEARCH SUMMARY

Chongxiao (Sean) Chen*, Xixi Chen #, Catherine Fudge*, Muhammad Ali*, Nicolás Mejia-Abaunza*, and Lily Xu #
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# Nutribins LLC

LATEST NUTRITION RESEARCH AT A GLANCE

POULTRY

In broilers, 0.02% **ellagic acid improved** average daily gain, FCR, spleen and thymus index, leg and breast muscle percentage, serum total protein, and breast muscle antioxidant *(catalase)* while reducing drip loss, blood urea nitrogen, and malondialdehyde at d 56. Moreover, it also increased the essential and flavor amino acids and polyunsaturated fatty acids with reduced saturated fatty acids in breast muscle.

Hunan Agricultural University | Link

In broilers aged 0-10 days, **wheat coarseness and particle size** (5mm vs. 3 mm vs. crumbled) have no effect on growth performance; from day10 to 34, no clear particle size preferences were observed, while **coarse grinding wheat had better performance than fine grinding wheat**.

Norwegian University of Life Sciences | Link

In broilers, **zinc form** (*sulphate or glycine chelate*) and levels (50 or 100% of requirement) affected the fatty acid profile of thigh meat at d 42. The requirement of Ross 308 broiler chickens for Zn was covered in full when in it was used in amounts covering 50% of the requirement, irrespective of the form in which Zn was used.

University of Life Sciences in Lublin | Link

In broilers, supplementation of 0.035% **microbial muramidase** and 0.1% precision **glycan** in combination improved the BWG and feed intake but did not impact FCR. Additionally, this combination enhanced the gut microbiome and increased duodenal villus length and serum carotenoids.

Dankook University | Link

In broilers under coccidia challenged (d14), feeding a **low protein diet** (16%) supplemented with either **Met or Thr** at levels 50% above breeder recommendations from d9 to d28 boosted IL10 and IL21 expression during the acute phase and enhanced AA digestibility during the recovery phase, but it did not affect performance.

Queen 's University | Link

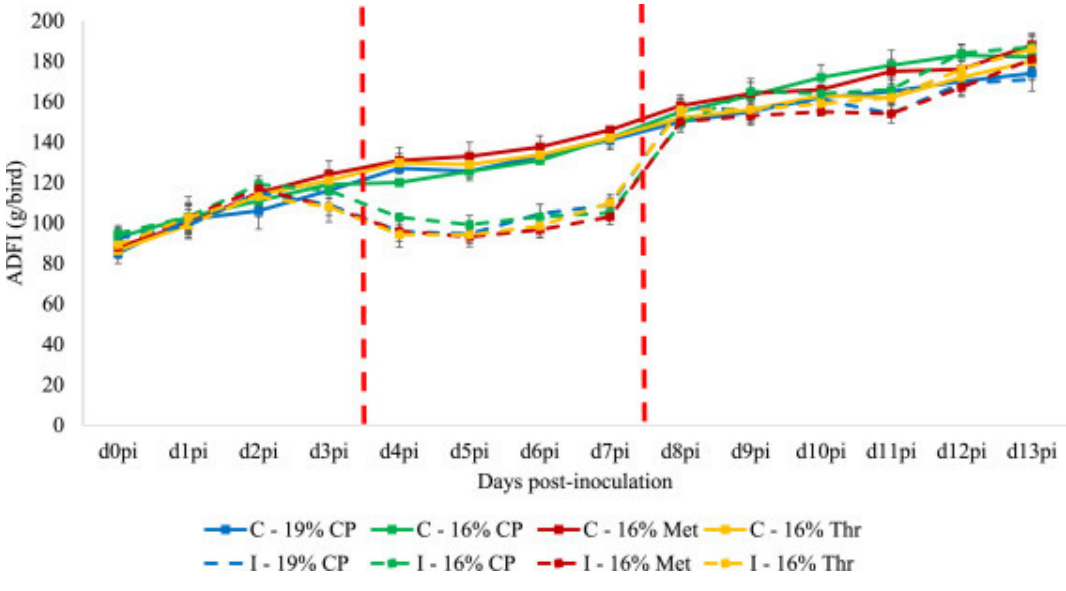

Fig. Average daily feed intake (ADFI) was significantly affected by challenge from d4 to 7pi

In broilers, feed treated with 40-, 80- or 120-seconds r**etention time** (RT) in the feed conditioner did not have impacts on feed intake or BWG up to 21 days. However, FCR was negatively impacted by 120-second RT. In addition, feed with an RT of 20 seconds had reduced phosphorous digestibility.

Auburn University | Link

POULTRY

LATEST NUTRITION RESEARCH AT A GLANCE

In organic broilers, replacing soybean meal with 50% or 100% **black soldier meal** reduced live performance, and 100% replacement also reduced carcass weight, thigh and breast weight, and PUFA in the meat.

Italian Society for Research on Agriculture and Rural Economy | Link

In 68-week-old layer hens, an 11-week dietary **super-dose of vitamin D3** (up to 36,000 IU/kg) did not affect performance or exhibit toxicity symptoms. A dosage response was observed with higher D3 showed higher levels of vitamin D3 and its metabolites in the plasma and egg yolk.

North Carolina State University | Link

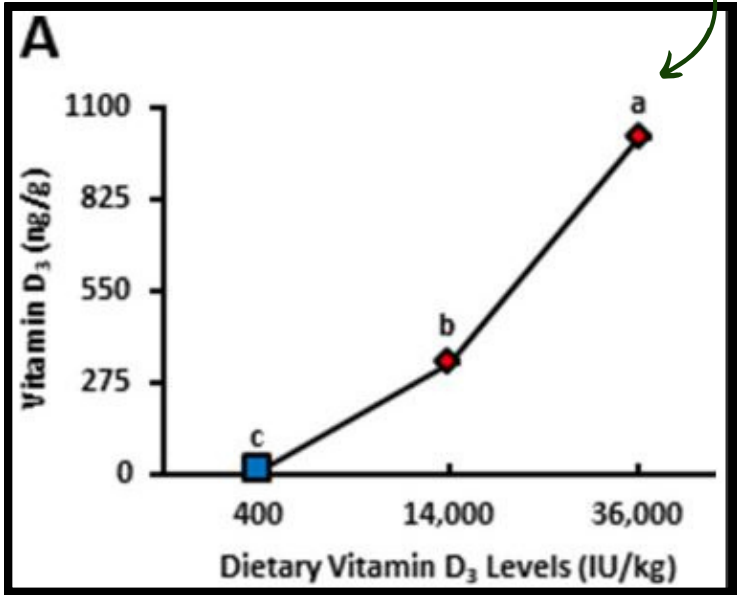

Fig. Egg yolk vitamin D3 metabolite concentrations from 78-wk Hy-Line Brown laying hens fed different levels of dietary vitamin D3.

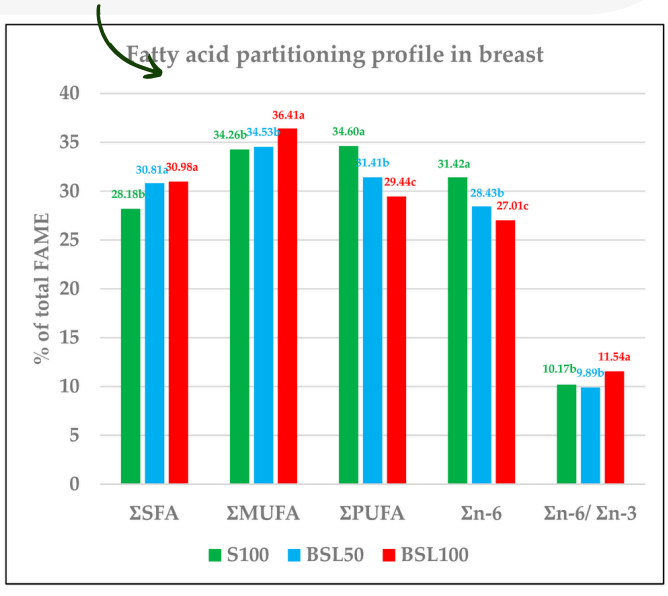

Fig. Fatty acid profile in the thigh (percentage of total FAME).

In brown laying hens, when corn grains were the only pigment sources in the diets, **different hardness of corn** (soft-type or hard-type) and **drying temperature** (40˚C or 85˚C) impacted the carotenoids of egg yolks. For the hard-type hybrid, the content of β-carotene in egg yolk was higher when grains were dried at a high temperature, while the opposite response was found in the soft-type hybrid.

University of Zagreb | Link

In brown laying hens, addition of 5 ug/kg **calcitriol** or 500 mg/kg **quercetin** improved eggshell strength, phosphorous and calcium content in eggshells, total ash content, total phosphorous and calcium content of femur bone. Molecular analysis indicated these positive effects are from modulating calcium metabolism.

Chinese Academy of Agricultural Sciences | Link

In Japanese quail, replacing **soybean oil with linseed oil** improves growth performance at 5 weeks. Both soybean oil and linseed oil improved hepatic and renal activity, immunity and antioxidant status than no-added oil group. In addition, linseed oil at 2% showed the best performance compared to the other treatments.

Zagazig University | Link

In Pekin ducks, **organic acids** (1kg/1000 L water) and **oregano oils** (118 mL/18.9 L water) improved the feed intake, FCR, gut morphology parameters, while reducing total plasma corticosterone, heterophil/lymphocyte ratios, and asymmetry score.

Texas A&M University | Link

LATEST NUTRITION RESEARCH AT A GLANCE

POULTRY

In ducks, the interactions of **crude protein levels** (18, 16, 14%) and **protein source** (black soldier fly larvae meal vs. soybean meal) were studied. The use of BSFLM in a low-protein diet was found to have a detrimental effect on growth performance. However, the reduction of 2% CP levels in SBM did not have a significant impact on growth performance but decreased nitrogen and ammonia concentrations.

Gadjah Mada University| Link

Review#1

Coccidiosis in Egg-Laying Hens and Potential Nutritional Strategies to Modulate Performance, Gut Health, and Immune Response

Coccidiosis has been well-studied in broiler production, where it is known to cause growth retardation, intestinal inflammation, and health issues. However, this parasitic disease also impacts laying hens, which has received comparatively less attention. This review aimed to extrapolate findings from broiler studies to predict potential impacts on laying hens. It focuses specifically on gastrointestinal physiology, immune response dynamics, and the effectiveness of nutritional strategies for mitigation.

University of Georgia| Link

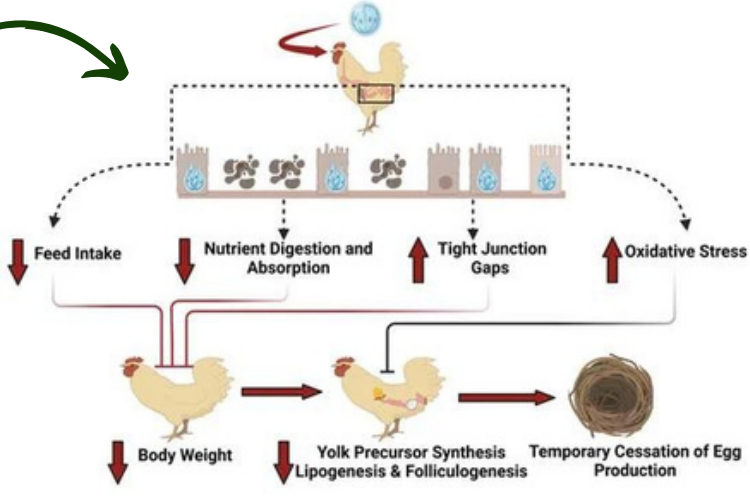

Fig. Potential mechanism of action showing how coccidiosis affects egg production in laying hens.

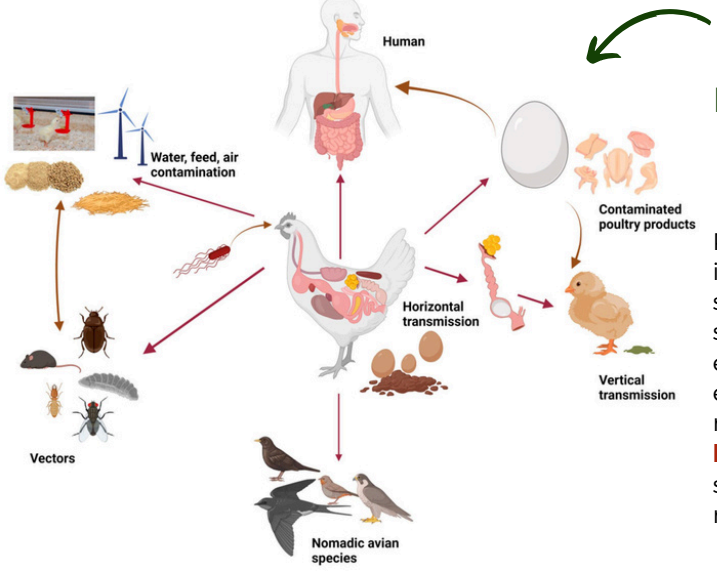

Fig. Summary of the different pathways through which Salmonella is transmitted

Review#2

Mitigation Potential of Herbal Extracts and Constituent Bioactive Compounds on Salmonella in Meat-Type Poultry

Phytobiotic feed additives have shown promising results in improving poultry health and performance and reducing salmonella load due to their pharmacological properties, such as stimulating consumption and enhancing antioxidant properties etc. The identification of bioactive compounds from herbal extracts is of great importance, showing promising results in managing and **controlling Salmonella in meat-type poultry birds**. The current review summarized the mode of action and studies of different types of plant extracts on salmonella control in meat poultry.

North Carolina A&T State University| Link

Review#3

A systematic review of nutritional strategies to mitigate pectoral myopathies in broiler chickens

Muscle myopathies are one of the big challenges for the poultry industry and can significantly affect meat quality. The two most important muscle myopathies are **woody breast and white striping,** which mostly **affects breast muscle** in broilers. One of the important ways to reduce the impact of these myopathies is nutritional strategies. This review covers a brief introduction and impact of myopathies and different nutritional including crude protein, amino acids and energy level alteration, anti-oxidants, mineral sources, feed restriction programs, and different feed additives. These dietary strategies fall into two categories: alter the growth curve and increase antioxidant capacities.

Federal University of Grand Dorados| Link