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

UGA Poultry Nutrition Newsletter

March, 2024

Poultry News

Feb 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

2024 Top Poultry Companies (WATT Poultry)

- Access production data of more than 1000 broiler, turkey, and egg producers worldwide

6 key factors affecting grain and protein markets (WATT poultry)
- 1. Fast-growing Brazilian chicken market; 2. economics impact meat with a higher price most; 3. hog market supply and demand 4. US is losing corn export share; 5. wars' effect on the economy; 6. interest rate is going to flatten off

Poultry to lead 2024's slow-growing animal protein market (WATT Poultry) (WATT poultry)

- The prospects for beef, pork and seafood are all on the downside this year, but broiler production should have a more positive year.

2023 saw second-highest prevalence of mycotoxins (Feed Strategy)
- The 2023 U.S. corn crop is so far showing signs of high levels of mycotoxins, alongside frequent contamination in DDGS and in finished feed as a whole

Hemp feed application expects green light in August (Feed Strategy)
- AAFCO committee has given hemp seed meal a tentative nod of approval ahead of its annual meeting.

UGA Poultry Research Highlight

Dr. Ramesh Selvaraj laboratory is the first laboratory ever to identify and characterize chicken T regulatory cells. T-regulatory cells are a subset of T cells specializing in immune suppression and are involved in microbial defense, pathogen persistence, impaired vaccine responses, and compromised anti-tumor responses. A comprehensive understanding of T regulatory cells is critical not only for understanding host-pathogen interactions during infections but also for vaccine design and development. Dr. Selvaraj holds a patent for nanoparticle vaccine delivery for Salmonella and Clostridium perfringens antigens. He has worked with several industry partners to identify the mechanism through which those products improve immune response and decrease disease severity in poultry.

Contact Selvaraj Lab

To learn more about Dr. Selvaraj's research

Recent Publications

The UGA Poultry Nutrition Newsletter is brought to you by

CHEN Lab

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Feedback

Eggsplore Poultry Events

March

Annual Meat Conference | Nashville TN | 18-20
Alumni & Friends Reception | Tifon GA | 26
Deep South Poultry Conference | Tifon GA | 27

April

UGA Hatchery Workshop | Athens GA | 2-4
UGA Hot Weather Workshop | Athens GA | 9-11
West Poultry Disease Conference | Salt Lake City UT | 15-17
North Central Avian Disease Conferences | South Minneapolis MN | 16-17
Workforce Success and Engagement Conference | Destin FL | 17-19
PEAK | Minneapolis MN | 17-19
8th International Conference on Poultry Intestinal Health | Metro Manila Philippines | 17-19
AFGA Nutririon Seminar | Huntsville AL | 24-25

May

Precision Poultry Seminar | Virtual | 1
Stakeholders Summit | Kansas City MO | 8-9
International Poultry Congress | Bursa Turkey | 8-11
International Avian Respiratory Disease Conference | Athens GA | 13-17
Poultry Health Management School | West Lafayette IN | 14-17
Poultry Processor Workshop | Nashville TN | 15-16

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

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
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

October

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

Cold Weather workshop | Athens GA | 18-20

TBD

Symposium on Gut Health in Production of Food Animals | St Louis MO | Oct - Nov
Poultry Tech Summit | Atlanta GA | Nov
NPFDA 2024 Fall Meeting | Orlando FL | TBD
Food Animal Innovation Summit | Raleigh NC | TBD
Processing Expo | TBD | TBD
US Poultry and Egg Education Programes | TBD | TBD
Live Production, Welfare & Biosecurity Seminar | TBD | TBD
Air Cargo Seminars | TBD | TBD
European Symposium on Poultry Nutrtion | TBD | TBD (2025)

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 | TBD

February

NTF Annual Convection | Scottsdale AR | 19-22

Check www.poultrynutritionhub.com for more.
Subscribe to UGA Poultry Nutrition Newsletter.
Check out FeedMixer: feed formulation at your finger tips.

FeedMixer
POULTRY NUTRITION HUB
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CHEN Lab

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2024 MARCH

In this issue, you will read research summaries from
10 Broilers studies
1 Layer study, 1 Turkey study
3 Literature review
from 18 research institutes in 7 countries

POULTRY NUTRITION RESEARCH SUMMARY

Chongxiao (Sean) Chen*, Xixi Chen #, Catherine Fudge*, Muhammad Ali*, Nicolás Mejia-Abaunza*, and Lily Xu #
* Department of Poultry Science, University of Georiga
# Nutribins LLC

LATEST NUTRITION RESEARCH AT A GLANCE

POULTRY

In broilers, reducing crude protein level (from 21% to 17%, 8-24 d) improved N utilization , but reduced growth performance and negatively affected energy utilization efficiency. Exogenous **multi-proteaseB** supplementation(2400 U/kg) improved AME, AMEn, protein, ileal AA, and DM digestibility in the 21% CP diet without significantly affecting growth performance.

North Carolina State University | *Link*

In broilers, supplementing 1% **mushroom powder**(MP) and/or 1-1.5% **garlic powder**(GP) had no significant effects on the growth performance; however GP increases humoral and cellular immunity response. The effect of increasing the level of GP on the Newcastle disease virus titers was more significant in the absence of MP.

Mashhad Ferdowsi University | *Link*

In broilers, **high oleic full-fat, normal oleic full-fat, and normal extruded expelled soybean meal** were compared. Normal oleic extruded expelled SBM shows the best performance (0-47d). The high oleic full-fat SBM increased oleic acid and reduced PUFA (linolenic acid and alpha-linolenic acid) and SFA (palmitic and stearic acid) in breast muscle.

North Carolina State University | *Link*

In broilers, **overcooked expeller soybean** (199 °C) can result in decreased AA digestibility, gut barrier function and growth development; while **undercooked ESB** (154 °C) can contain anti-nutritional factors, reduce nutrient availability for growth and development during early stages.

University of Georgia | *Link*

In broilers, supplementing **organic zinc** (Zn-methionine, 80 mg/kg) increased body weight gain and gut development and reduced zinc excretion compared to inorganic zinc oxide (80 mg/kg) at d 35.

Pakistan Agricultural University | *Link*

In Hanhyup-3-ho chickens , 0.05% **herbal mixture (ginseng and artichoke extract)** supplementation offers pronounced enhancements in average body weight gain, feed efficiency, blood albumin and SOD, and meat quality parameters, alongside environmental benefits through reduced excreta NH3 and H2S emissions.

Dankook University | *Link*

In broilers, replacing soybean protein **with free-form amino acids** at 50% from 7-22 d did not affect growth performance. However, using 100% free amino acids resulted in decreased growth performance. Replacement of 50% and 100% of amino acids also increased N excretion.

University of Hohenheim | *Link*

POULTRY

LATEST NUTRITION RESEARCH AT A GLANCE

In broilers, measured **AMEn of 13 commercially available lipids** varied considerably compared to the predicted values. The low inclusion level makes it challenging to determine the lipid AMEn value.

USDA ARS & Auburn University | Link

Table 1. Comparing the amino acid content and ratio of amino acid/lysine in *Spirulina platensis* and SBM (Alvarenga *et al.* 2011).

	Amino acid content (%)		Amino acid value/lysine	
Amino acid	*Spirulina*	SBM	*Spirulina*	SBM
Aspartate	5.34	5.29	196	189
Glutamate	8.15	8.65	300	309
Serine	2.92	2.42	107	86
Glycine	3.00	2.01	110	72
Histidine	1.00	1.38	37	49
Arginine	3.96	3.55	146	127
Threonine	2.84	1.85	104	66
Alanine	4.54	2.02	167	72
Proline	2.15	2.36	79	84
Tyrosine	2.58	1.74	95	62
Valine	3.34	2.03	123	73
Methionine	1.98	0.79	73	28
Cystine	0.72	0.59	26	21
Isoleucine	3.06	2.04	113	73
Leucine	4.84	3.40	178	121
Phenylalanine	2.50	2.29	92	82
Lysine	2.72	2.80	100	100
Total	55.65	45.20	–	–

In broilers, **methionine** at 4.57g/kg or 5.22g/kg from day 11-35 improved FCR from day 0-35 during a coccidiosis challenge compared to methionine at 3.92 g/kg， providing evidence that the Met requirement is likely increased during coccidiosis based on growth performance outcomes.

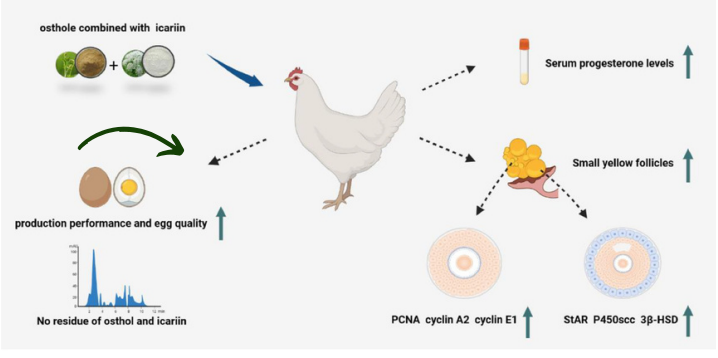
University of Illinois | Link

In broilers, adding the **xylo-oligosaccharides** (XOS) at 150, 300, and 450 mg/kg shows different levels of improvement in growth performance, gut development and barrier function, immunity, and cecal microbiome. 150 mg/kg is recommended in the current study.

Henan Agricultural University | Link

In laying hens at 40 weeks, dietary supplementation of 2 mg/kg **Osthole** (Ost) +2 mg/kg **icariin** (Ica) increased granulosa cell proliferation in SYF and increased P4 secretion in granulosa cells of LYF, ultimately increased the laying rate, average egg weight, Haugh unit, and protein height of laying hens.

Shanxi Agricultural University | Link



Graph Summary

In turkeys fed low-density diet, an **18-hour feed withdrawal** or coccidiosis challenge increased liver lesion scores and infection rates during a H. meleagridis challenge.

University of Georgia | Link

Review#1

Promising future of citrus waste into fermented high-quality bio-feed in the poultry nutrition and safe environment

Citrus by-products from the food industry have potential usages in poultry feed. Citrus contains antioxidants, many nutrients, and vitamins. This waste comes in many forms, such as peels, seeds, and pulp, varying in nutrient makeup. This review summarizes the use of citrus in feed and future usage as a fermented probiotic.

Jiangsu University | Link

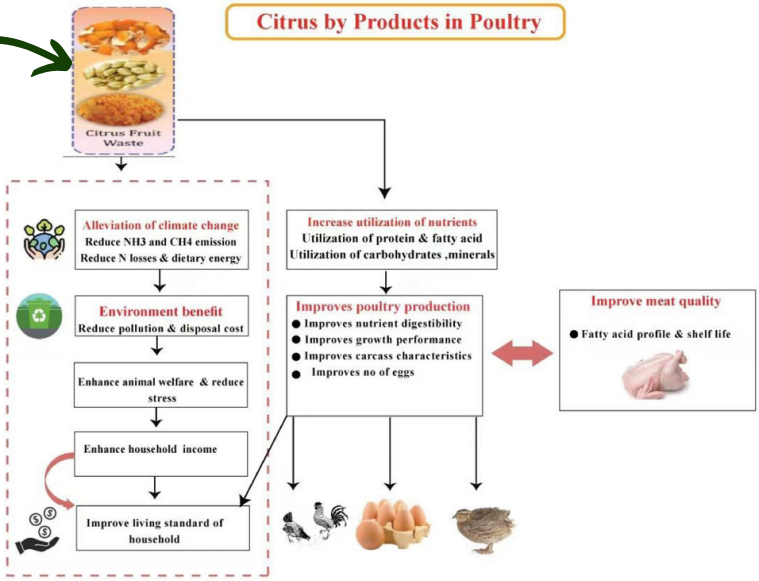


Fig. Different citrus residues and selected extracts from citrus fruits processing

LATEST NUTRITION RESEARCH AT A GLANCE

POULTRY

Review#2

Flight toward Sustainability with Black Soldier Fly Larvae

Protein levels in BSFL range from 32% to 53%, with high digestibility. Fat levels range from 18% to 33% and contain up to 9% calcium and 0.7-1.5% phosphorus and other essential minerals. However, the chitin (5.6-6.7%fibrous material) might impact nutrient utilization and limit its application. This review summarizes the use of **black soldier fly larvae** in growth performance, meat quality, gut health, and the importance of proper inclusion levels for adequate results.

Prairie View A&M University, South Valley University, Shinshu University, Texas A&M University | Link

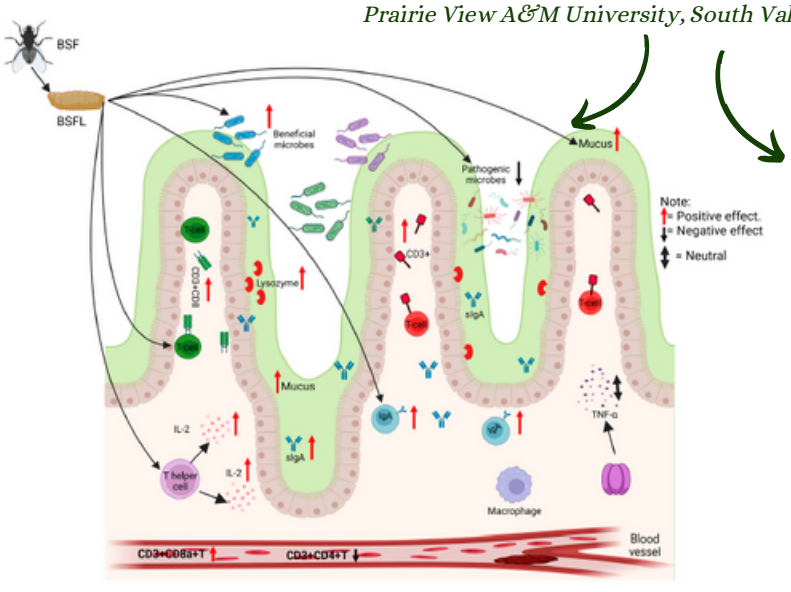


Fig. The diagram illustrates an overview of the impact of BSFL dietary supplementation on the immune response in broiler chickens.

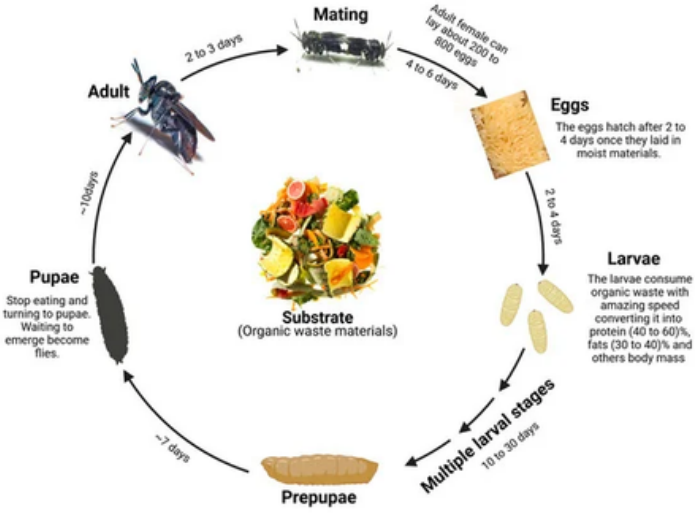


Fig. The life cycle of a black soldier fly

Review#3

Functional feed for broiler chickens: exploring Spirulina platensis as a nutritional supplement

Spirulina p. (Arthrospira platensis) is a blue-green filamentous alga and serves as a functional feed or additive in broiler diets. It has high amino acid-based protein content, essential fatty acids and polysaccharides, vitamins, minerals, and carotenoids. It helps to improve broiler growth performance, carcass quality, immune function, and gut microbiota. This review summarized the Spirulina p. nutrient profile, its impact on broiler growth performance, carcass characteristics, gut morphology, ileal microflora, immunity, and antioxidant status.

Agricultural Research Education and Extension Organization | Link

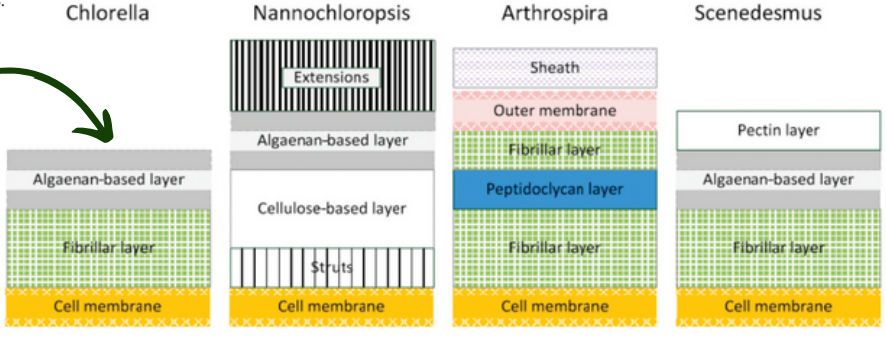


Fig. Cell wall structure of four microalgae

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