

NE1942 Annual Meeting
Enhancing Poultry Production systems through Emerging Technologies and Husbandry Practices
Miller Poultry Center, Auburn University
June 7-8, 2023

Officers for 2023

Sr. Exec – Pratima Adhikari, MSU
 Jr. Exec – Indu Upadhyaya, UConn
 Secretary –Shawna Weimer, UArk

June 7, 2023.

The meeting was called to order by Pratima Adhikari at 8:30 am.

Introduction of Participants:

- Pratima Adhikari – Mississippi State University – Laying hen nutrition, management, gut health – joined 2018
- Indu Upadhyaya – UConn – extension food safety – joined 2020
- Shawna Weimer – University of Arkansas – Animal welfare – joined 2018
- Kumar Venkitanarayanan– UConn, Dean – Food safety – Academic advisor
- John Boney – Penn State – Nutrition
- Doug Cosby – USDA-ARS Georgia – Microbiology– joined 2016
- Tayo Adedokun– University of Kentucky – swine & poultry nutrition– joined 2015
- Ken Koelkebeck – U of Illinois, extension –joined 35 years ago (NE127)
- Tony Pescatore – University of Kentucky – joined 35 years ago
- Wilmer Pacheco – Auburn University – extension feed milling
- Brett Ramirez – Iowa State – ventilation & environmental control
- John Linhoss – Auburn University – environmental management– joined in 2014-15
- Xue Zhang - Mississippi State University – meat quality– just joined
- Li Zhang- Mississippi State University – microbiology and food safety– just joined
- Reshma Ramachandran– Mississippi State University – reproductive physiology & health of breeders
- Anuraj Theradiyil Sukumaran – Mississippi State University – food safety & processing
- Bethany Baker-Cook – Auburn University – poultry welfare
- Dianna Bourassa – Auburn University – extension food microbiology & stunning
- Paul Patterson – Dean of Ag College & Alabama Experiment Station Director
- Brigid McCrea – Auburn University – poultry extension

Virtual Introductions:

- Ken Anderson – NC State –layer management – joined over 30 years ago
- Ken Macklin – Mississippi State University – Poultry Science Department head– extension microbiology and gut health –joined in 2006
- Hong-Wei Cheng – Purdue University (USDA) – poultry welfare
- Hong Li – U of Delaware – applied poultry research

Auburn Administration Welcome – Dr. Paul Patterson

- This is the 4th regional meeting hosted at Auburn in 2023
- While Dr. Dozier stepped down, a position for the Department Head of Poultry Science will be posted soon.
- Dr. Patterson highlighted the historical significance of Auburn University, citing the Auburn creed – Dr. Peatree & Dr. Adkinson – and the university's football coaches in 1892. Dr. Adkinson – Cotton research – root-knot nematode, Atkinson Tomato
- The College of Agriculture celebrated its 150th-anniversary last year, as Auburn University became the South's first land grant institution in 1872.
- College of Agriculture – 2022 stats
 - 8 academic departments
 - \$63M Budget
 - 1,069 undergraduate students
 - Stats
 - 68% Alabama residents
 - 26% transfer
 - 20% first generation
 - 18% Pell-eligible
 - 88% employment success
 - Student experiences – workers, researchers, study abroad, internships, academic support, professional development, student competitions
 - 341 graduate students
 - 152 faculty
 - 72 hired in the past 7 years (47%)
 - “you can't change people but you can change people”
 - \$38M research awards
- Research facility needs/plans
 - \$11.5B in deferred maintenance across the nation
 - \$38.1B replacement cost
 - Research Facilities Act
 - Funchess Hall – main building – built in 1960's
 - STEM + Agricultural Sciences Complex will replace Funchess Hall, breaking ground 2023, \$200M project, 265,00 GSF
 - Garden Center
 - Charles C. Miller, Jr. Poultry Research and Education Center
 - 30 acres in North Auburn, completed in 2021, multi-faceted facility – feedmill, hatchery, research trial facilities, processing plant, engineering education center (NPTC), administration building
- AAES Experiment station
 - Established before Hatch Act in 1883
 - \$63M revenue sources FY2023

- State \$39.2M
 - Federal \$5.6M
 - Grants and contracts \$12M
- He explained that the AAES supports 95 faculty members across 5 campuses. The AAES offers various forms of support, including an AAES competitive seed grants program, grant writing workshops, DC orientation for new faculty with funding agencies, research workshops, grantsmanship funds, and statistical consultation. The AAES has \$2 million available for seed funding, with approximately \$50,000 per proposal, to address applied problems.
- Question and Answer Session
 - Dianna asked why there was an increase in funds after COVID. Dr. Patterson responded that the increase could be attributed to an upsurge in grant writing and the publication of more journal articles.
 - Tony inquired about the tracking of faculty success after traveling to Washington, D.C. Dr. Patterson confirmed that they do track the success of faculty members who have visited D.C.
 - Kumar asked if successful federal grant proposals from faculty who received seed funding were tracked. Dr. Patterson affirmed that they do track such success and provided an example of a successful peanut crop physiologist.
 - Indu questioned Dr. Patterson about other sources of funding. He mentioned that the AAES receives funding from USDA-ARS (\$20 million), NSF, and DOE.

Meeting called to order– Dr. Pratima Adhikari

- Pratima Adhikari called the meeting to order and commenced with the approval of minutes from the previous meeting, which took place during the IPPE 2023 midyear meeting. The proposed dates for the meeting were June 5-6, with the actual meeting taking place on June 6-7. Doug Cosby motioned to approve the minutes, and Ken Anderson seconded the motion. The minutes were approved at 9:32 am.

Administrative Update – Dr. Kumar Venkitanarayanan

- Dr. Kumar Venkitanarayanan provided an administrative update. He shared his background, having been a faculty member at UConn for 25 years and serving as the Associate Dean of Experimental Station and Graduate Studies for 7 years, specializing in pre-harvest poultry food safety.
- Kumar explained the simplified process for submitting new projects to NIFA for approval. The Associate Dean of the institution submits the projects to a review committee for approval.
- He mentioned that NE1442 had received the Excellence in Multistate Research Award and expressed the intention to nominate NE1942 next year in collaboration with Ken Koehelbeck.
- USDA SAS \$10 million dollar grant overview, 13 institutions, 10 objectives/10 teams, human health and safety, broiler health production, and welfare, industry and stakeholder outreach, increase consumer awareness and acceptability, probiotics, recycling poultry litter, cost benefit analysis of the entire project, sustainable production

educational programs, environmental health, project webpage

<https://sas.poultryproject.uconn.edu/>

- PSA symposium in July 13th – Multi-disciplinary Approaches for Promoting Broiler Health, Performance, Welfare and the Environment
- Questions
 - Attendees asked about the number of investigators involved in the SAS grant, to which Kumar responded that there are 22 investigators and several collaborators.
 - Kumar was asked about the membership numbers of the NE1942 group compared to others. He explained that this group is one of the largest, active, and productive Northeastern multistate research groups.
 - When questioned about plans for a no-cost extension, Kumar mentioned that they intend to apply for it soon but noted that its approval is not guaranteed.

Proposed Meeting Locations in 2024:

- Key reason minimum – Ken and Tony - tour facilities historically. They emphasized the importance of setting aside dedicated time for scientists to interact, collaborate, and exchange information.
- Ken Anderson expressed the need to make a decision on this matter.
- Kumar Venkitanarayanan emphasized the importance of having a reliable local contact person to handle logistics.
- Tony motioned to approve the three proposed locations for the 2024 meeting, and Doug seconded the motion.
- Tayo suggested creating a list of strengths and weaknesses for each location, considering factors such as dates, education components, and finances.
- Dianna mentioned the requirement of a letter of commitment from the host.
- International
 - Wilmer is key organizer
 - 1) Santorini, Greece
 - Location: American Farm School
 - <https://www.afs.edu.gr/>
 - Reasons: sensitive environment, small carbon footprint
 - Logistics: money works the same
 - Education program component, local industry
 - Housing – student housing available
 - Costs: getting there is costly but cheap while there
 - Challenge: PSA board takes a long time to get back, scheduling would be a tight timeline
- Domestic locations
 - John Boney connection - Penn State Extension Admin moving to UCal
 - 1) UConn
 - 2) California

- Indu motioned to table the discussion of the 2024 meeting location to after lunch, and Pratima seconded.

2023 Station Reports:

- Iowa State University: Brett Ramirez, Dawn Koltes, Richard Gates reporting. They mentioned the urgent need to update the NIMMS email list (Appendix E). Richard Gates discussed the VSD project. Koltes and Ramirez reported on the first flock getting slaughtered in the new turkey facility.
- Penn State University: John Boney reporting. Paul Patterson retired, and Durbin Brian started three weeks ago. Phil Clauer retired, and the university is looking to replace him in the fall. Bob Elkin retired. Updates included the construction of a new Animal, Veterinary, Biomedical Sciences building, renovations for laying hen facilities, on-farm nutrient profile segregation/proximate/quality, and feed bin location.
- NC State: Ken Anderson reporting. New department head, Frank Siewert, was announced. The university is seeking a replacement for Donna Carver's extension position. Facilities at the chicken education unit are being updated, including the addition of a small aviary research facility. Work is also being done on a commercial-sized aviary, shell egg and meat processing facilities, and the Layer Test. Research focuses on VSD alternatives (heat, humidity, CO₂, nitrogen) and the development of a VSD tool.
- Auburn University:
 Dianna Bourassa reporting. The university is actively looking for a department head and six faculty positions, with funding from USDA-ARS positions. A new microbiologist has been hired to conduct basic Salmonella research. Research projects include studying the effects of gas stunning on meat quality and food safety, as well as interventions during the first processing stage.
 Bethany Baker-Cook reporting. Collaborating with John Linhoss and Jeremiah Davis on various research topics, such as natural lighting, euthanasia, feeding behavior, behavioral sequencing of chickens and turkeys, hatchery welfare, and broiler breeder mating behavior.
 John Linhoss reporting. Continuing research on the comparison between natural and traditional lighting in terms of production and welfare. Developing a system for litter amendments to reduce ammonia levels. Monitoring temperature in 60x600 and 40x400 houses using approximately 1,000 temperature sensors. Analyzing data quality and integration into controller systems/spatial analysis.
 Wilmer Pacheco reporting. Conditioning temperature effects on performance, amylases, mash diets, corn origin effect on nutritional quality, amino acid digestibility, Ca/P effects on performance
 Brigid McCrea reporting. She is involved in 50% small flock extension and the national small flock advisory council. Updates included her work with Alabama 4H. Ken Anderson mentioned plans to intermingle sheep and chickens in four pastures at NC State.
- Mississippi State University:
 Ken Macklin reporting. He is the new department head. Peebles will be retiring, discuss invitations to apply for this position at faculty retreat in July, Tim Boltz and Kelly Wamsley

are working on getting a new feed mill, collaborating on egg parameters in relation to fertility and hatchability.

Anuraj Theradiyil Sukumaran reporting. Pre/post-harvest campylobacter research, free radical salmonella research with Canadian company, USDA-ARS hatchery sanitation interventions, FSIS carcass inspection workshop.

Reshma Ramachandran reporting. E.coli and broiler breeders, APEC categorization, vaccine targets in turkey breeders, broiler breeder reproductive tract microbiome, egg quality parameters.

Li Zhang reporting. His research areas included poultry pathogen control, specifically APEC, Clostridium and Campylobacter, vaccine development, gut microbiome model development, and MG research – his lab is looking for a postdoc.

Pratima Adhikari reporting. Looking for PhD student for laying hen APEC study, 75-wk almond hull inclusion levels & enzymes laying hen project, pullet coccidiosis, SE interventions, phytase and limestone particle size, branched chain amino acids, cage-free aviary goals.

Xue Zhang reporting. Meat quality research – renovating building for research/teaching lab, sensory facility, chicken product quality, pre and post processing steps on bacteria, woody breast 2 strains do not have as much woody breast as others, 4 biomarkers for woody breast, industry collaboration.

- University of Connecticut:

Kumar Venkitanarayanan reporting. Looking for post doc aerobic microbiologist, SAS project meeting at PSA, salmonella, phytochemicals.

Indu Upahdayay reporting. Microbial food safety, risk analysis, poultry health outreach, extension on ultramicro bubble technologies for food safety, 4H, FFA outreach, microbial prevalence in free-range eggs, probiotic interventions with food safety in layers and broilers, HACCP trainer.

- University of Arkansas:

Shawna Weimer reporting. Updates included the SMART house and the hiring of Danielle, Tomi, and Zac. They are planning to hire a nutritionist and a 4H coordinator out of Little Rock, poult foraging behavior, FPD and ammonia air scrubbers, thermal conditioning and heat stress, hatching humidity and welfare, lighting and heat stress, incubation lighting, cognitive bias RJF ACRB, cattle welfare.

- University of Kentucky:

Tony Pescatore reporting. Tornado destroyed Western Kentucky experiment station, flooding destroyed Eastern Kentucky experiment station, pipe burst renovations in 76 buildings, fire and wind damage, new USDA building to research forage and hemp, \$100 million donation to name the college of ag, poultry medicine training with AAAP.

Tayo Adedokun reporting. Mycotoxins and gut health, digestibility, blood chemistry, enzymes, heat stress, gut injury, function, gene expression, good heat stress facilities for breeders or layers or broilers up to 28 days – 140 laying hens and 24 roosters.

- University of Illinois:

Ken Koelkebeck (emeritus) reporting. New feed technology center \$20M, work with Parsons and Emmert on nutrition, feed ingredients, amino acid digestibility, new dean, environmental chambers.

- University of Delaware:
Hong Li reporting. On-farm water treatment and productivity, ammonia treatments in commercial houses, hatchery spray cabinet foam-based vaccination technology.
- USDA-ARS:
Heng-Wei Cheng reporting. Gut brain functioning, microbiome and welfare.
- University of Minnesota:
Johnny Anup reporting. Sally Noll retired last year, COE - Midwest poultry consortium award.

Ken Koelkebeck needs station reports by July 31

- Paragraphs in a word document
- Use last year's template
- List of publications (dissertations, journal articles, theses, invited talks, extension pubs, awards)
- Highlight sustainability in the report

12:30 – 1:30 Lunch

Rewrite:

- Ken Koelkebeck Announcement
 - Submit letter of intent to request a renewal of this multistate on October 1
 - Completed proposal draft with 5-7 potential reviewers (industry or academia) by January 24
- Objective 1
 - Old: Integrating technological advances into poultry systems.
 - Comments: This will include collaborative research on incorporating engineering and technology to enhance system efficiency and sustainability through infrastructure development of blockchain production.
 - New: Advancing sustainable poultry systems through precision management
- Objective 2
 - Old: Establishing and adopting husbandry practices to a changing industry landscape.
 - Comments: This collaborative research will encompass a multi-disciplinary approach to create a resilient poultry production system through optimal management of inputs and outputs in an ethically responsible manner.
 - New: Fostering innovative production practices through dissemination of research-based information
- Title
 - Old Title: NE1942 Enhancing Poultry Production Systems Through Emerging Technologies and Husbandry Practices
 - New Title: NE2442 Improving Sustainable Poultry Production Through Collaborative Research

Elections

- Dianna Bourassa nominated and motioned for Li Zhang to be secretary, Tony Pescatore seconded, and Li accepted
- Dianna nominated and motioned for Shawna Weimer to be Junior Executive and Indu Upahyaya, Brigid McCrea seconded
- 2024 Officers
 - Senior Executive
 - Indu Upahyaya
 - Junior Executive
 - Shawna Weimer
 - Secretary
 - Li Zhang

Doug Cosby motioned to Adjourn, Tony seconded, tour of processing plant and National Poultry Technology Center.

June 8, 2023.

The meeting was called to order by Pratima Adhikari at 8:35 am.

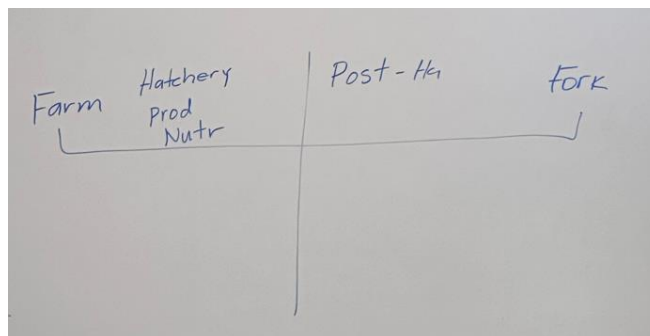
- Virtual attendees
 - Ken Anderson, Yan Campbell, and Lin Walker
- Schedule updates
 - First unfinished business
 - Meeting location
 - Rewrite sub-objectives
 - Ray Hillburn speaks at 11:00 AM
 - Box lunch
 - Tour of Auburn Poultry Science building
- 2024 Meeting location
 - Salonica, Greece
 - Wilmer can coordinate
 - Florence, Italy
 - Wilmer can coordinate
 - UCDavis
 - John, Shawna, Brett can coordinate
 - UConn
 - Indu can coordinate
 - Mayaguez, Puerto Rico
 - Wilmer can coordinate
- Voting
 - Tentative votes
 - 1) Puerto Rico – 9 votes
 - 2) Greece – 8 votes

- 3) UConn – 5 votes

- Li and Indu will send a poll for voting

Subobjectives

- New Title
 - NE2442 Improving Sustainable Poultry Production Through Collaborative Research
- Wilmer suggested identifying the group disciplines/capabilities and shaping objectives and subobjectives under each discipline. The idea of forming groups was also discussed.
- Ken A. mentioned the need to assess the expertise required within the group and consider bringing in or developing specific expertise.
- Brigid suggested adding key words for Objective 2b and discussed about small or unregulated production systems. The group acknowledged the need to check USDA regulations in this regard.
- Ken Anderson proposed using the term "exemption" instead of "unregulated" in the discussion.
- Wilmer proposed adopting the farm-to-fork concept and dividing the objectives into two categories: Farm level (including hatchery, production, nutrition, etc.) and Fork level (encompassing post-harvest management, food safety, quality control, and consumer panel).



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- Revise objectives according to Wilmer's suggestion
- **Objective 1:** Advancing sustainable poultry systems through precision management
 - **a) Pre harvest:** Environmental control and management – housing, litter management, ventilation, lighting, behavior and welfare, nutrition, feed processing.
 - **b) Post harvest:** post harvest food safety, processing methods, waste water management, offal and rendering.
 - **c) Environmental footprint:** carbon footprint, nutrient utilization, production systems, life cycle analysis
- **Objective 2:** Fostering innovative production practices through research and extension
 - **a) Pre harvest:** incubation and hatchery, reproductive physiology, nutrient excretion reduction, precision nutrition, utilizing alternative feed ingredients, alternative sustainable production systems, alternative feed ingredients, NAE/ABF, gut health, gut microbiome, poultry health and disease management,

- pre- food safety, alternative sustainable production systems, production systems under regulatory exemption.
 - **b) Post harvest:** innovative processing tech, production systems under regulatory exemption, post-harvest food safety, Meat and egg quality, economic analysis.
 - **c) outreach and training:**
- Brigid suggested adding workforce development as a subobjective, which led to the creation of subobjective 2C.
 - Wilmer suggested hosting a symposium at the next PSA meeting and inviting speakers to address the identified topics.
 - 10-mins break. Meeting continues at 10:30am. Give a final review of the subobjectives before guest speaker presentation.
 - Wilmer- ask all members to send their material. Remove the categories if no one fit in certain objectives.
 - Ken emphasized the need to work on the plan for the next five years in 2024.

Guest speaker presentation.

- John Linhoss introduce Ray Hilburn to the meeting members.
- Ray Hilburn presentation.
 - Ray expressed his willingness to provide recommendations and support letters to university faculty. Ray mentioned that his father has a hatchery, and although he himself has never worked in a feed mill, he has extensive experience in live production sites and has conducted various experiments related to poultry farming. Ray shared information about his own poultry farm, which consists of four broiler houses, two of which were built in the 1940s and the other two in 1996. The target weight for the birds is 3.85 pounds, and they are processed at 34 days. Ray highlighted some challenges he has encountered, such as a drop in equipment parts quality after Covid, resulting in non-functional fan motors. He expressed the need for research to help develop more efficient tools and reduce energy costs, particularly related to the replacement of cool cell pads. He emphasized the importance of water quality, stating that it is even more critical than feed quality. Ray discussed the need for assistance in managing daily mortality on poultry farms and suggested exploring solutions for dealing with the disposal of deceased birds. He mentioned the increasing demand for machines to dehydrate the birds due to limited disposal options. Ray identified pet foods as another promising area for research and mentioned the potential of rainwater catchment as a topic of interest. He also mentioned the rising price of poultry litter and the importance of finding alternative uses for it. On the processing side, he highlighted the potential to utilize wastewater and feathers.
- Q&A session
 - Wilmer inquired about the rising litter prices and how to use it more effectively. Ray emphasized the need for further research on litter utilization and encouraged

farmers to conduct trials to explore the advantages of poultry litter, such as its longer-lasting effects compared to commercial fertilizer.

- Tony asked about the source of wood shavings, mentioning saw mills. Ray stated a preference for using pine shavings.
- Tayo asked about feed costs, and Ray explained that the feed is typically paid for by the company, while farmers cover the energy bill. He also noted the significant variation in water costs, even within the same state.
- Pratima asked about the delivery of feed, and Ray discussed the use of cocci stat in feed despite human antibiotics not allowed to use in feed. He mentioned a slight increase in enteritis as a result.
- Brett highlighted the importance of proper facility maintenance for maintaining good performance, even in older houses. Ray agreed and advised replacing equipment before it becomes too late, as it can be more costly to address issues later on.
- Tony inquired about the difference in energy bills among different growers. Ray mentioned that solar panels can help reduce energy costs and mentioned that some companies sell solar panels to earn carbon credits.
- John asked about composting on Ray's farm. Ray advised against in-house composting for larger birds and emphasized the importance of proper management of composting systems for farmers.
- Dianna raised the topic of food safety and the efforts by FSIS (Food Safety and Inspection Service) to reduce Salmonella on farms. She mentioned that implementing management practices to address Salmonella can be time-consuming and costly for farmers. Ray responded that improving litter quality can help reduce Salmonella levels and improve overall performance, benefiting farmers. He emphasized the need for research trials to confirm the effectiveness of these concepts and highlighted the mutual benefits of improving food safety and quality.

Adjournment

- Ken- will contact Kumar for the rewrite. Jan 15, 2024 and July 31, 2024 are the deadlines.
- Need minutes for the report, summarize and rewrite proposal.
- The meeting members appreciate Pratima for her great service.

Meeting adjourned at 12:00 pm.