



2024-2026 USPOULTRY

Research Priorities

The U.S. Poultry & Egg Association (USPOULTRY) is dedicated to the growth, progress, and welfare of the poultry industry and all its individual and corporate interests. The promotion of problem-related research and the training of graduate students are priorities for the association.

Proposed research projects should be designed to provide information that has the potential to resolve real industry problems. USPOULTRY realizes that novel issues are always emerging and that scientists may see the importance of a potential problem that has not been recognized or cited as an industry research need. USPOULTRY invites proposals that address problems outside the industry list but urges the proposer to provide ample background and justification to explain the need for the research.

The ranked research priorities presented herein represent the identified research needs for the poultry industry.

Top Overall Research Priorities

Category	Research Needs Statement
Animal Welfare	Develop methods to determine the sex of embryos prior to hatch.
Breeder Management	Develop improved methods for egg management, sanitation, and storage to optimize chick quality.
Meat Bird Management	Define and describe the microbiological effects of layout time and interventions that can substitute for layout time (i.e., sanitation practices, litter composting, litter amendments, etc.).
Commercial Egg Production	Develop rapid, non-destructive, and quantitative methods for determining egg microbiological quality for routine quality control practices in commercial eggs.
Diseases	Develop a live Salmonella vaccine that is equally effective across multiple serogroups.
Environmental Management	Develop best practices for peracetic acid use in poultry processing to optimize/balance use, pH, PAA dosage levels, food safety intervention, and wastewater impacts.
Food Safety	Determine safe and effective antimicrobial applications to reduce Salmonella and Campylobacter levels and/or prevalence associated with mechanically deboned poultry, poultry parts, and heat treated (Not-Ready-To-Eat) poultry products, as well as the raw materials used to produce them.
Hatchery Management	Devise and validate enhanced hatching egg management and operational sanitation methods to improve microbiological quality of hatching eggs and chicks/poults while protecting worker safety.
Nutrition	Define the optimal intestinal microflora for maximizing the genetic potential of current broiler and turkey strains.
Processing	Determine additional automation capabilities in processing facilities from arrival of live birds through to packaging and dispatch.
Employee & Safety Health	Industrial hygiene monitoring and sampling protocols -- identify potential exposures and develop a protocol for determining permissible exposure levels and for determining required frequency and methodology for routine sampling – including ammonia, chlorine, nuisance dusts, formaldehyde, carbon dioxide and a variety of airborne infectious diseases such as aspergillosis and histoplasmosis.

Animal Welfare

Rank	Research Needs Statement
1	Develop methods to determine the sex of embryos prior to hatch.
2	Evaluate new methods of mass depopulation, specifically for broilers, turkeys, layers and breeders.
3	Devise and test qualitative and quantitative methods to objectively evaluate key bird welfare outcomes (i.e., distribution, gait, activity and enrichment use, etc.). Methods may be specific to an area of production or poultry species.
4	Investigate approaches to improve bird welfare during catching, cage unloading and bird movement through to shackling (including unloading area design).
5	Define the contribution of genetic selection to leg weakness and skeletal problems and devise selection strategies to ameliorate these issues.
6	Devise and test improved conveyances (vehicles, transport containers, loading/unloading devices) that result in reduced bird stress, injuries and losses and enhance product quality and public image in live transport and unloading. Methods may be specific to an area of production or poultry species.
7	Evaluate the ability of probiotics/feed supplements to improve gut health leading to decreased litter moisture and improved welfare outcomes (i.e., foot condition, hock condition, etc.) for poultry while in the house.
8	Establish what enrichments and lighting programs (type, intensity) are best for welfare outcomes for indoor-raised, commercial broilers (standard breeds).

Breeder Management

Rank	Research Needs Statement
1	Develop improved methods for egg management, sanitation, and storage to optimize chick quality.
2	Develop alternative feeding and nutrition management programs for replacement pullets aimed at eliminating current feed restriction programs.
3	Develop rapid, non-destructive, and quantitative methods for determining egg microbiological quality for routine quality control practices (hatching eggs).
4	Improve the understanding of the transmission of all critical public health Salmonella serovars from breeders to progeny.
5	Establish feeding and lighting schedules for pullets/hens and turkey breeder hens for maximum production/hatchability.
6	Determine etiology, epidemiology, prevention, and control measures for mortality of breeder hens and roosters from housing to peak production.

Meat Bird Management

Rank	Research Needs Statement
1	Define and describe the microbiological effects of layout time and interventions that can substitute for layout time (i.e., sanitation practices, litter composting, litter amendments, etc.).
2	Develop/evaluate strategies and tools for effective and economical house cleaning and disinfection during the life of the flock and between flocks.
3	Determine the influence of spectrum, intensity, and photoperiod for different ages on performance and wellbeing.
4	Devise methods to effectively reduce viral shedding from houses affected with Highly Pathogenic Avian Influenza (HPAI) prior to depopulation.
5	Develop nutrition/management programs to maximize performance in antibiotic-free production systems.
6	Compare different brooding methods using energy consumption, mortality, and growth rate as criteria.
7	Develop and evaluate a feeding program and management practices (lights, feed pan management, water pressure, temperature, etc.) to slow the growth of normal growing commercial broilers and turkeys in the field that can be immediately implemented during an emergency.

Commercial Egg Production

Rank	Research Needs Statement
1	Develop rapid, non-destructive, and quantitative methods for determining egg microbiological quality for routine quality control practices in commercial eggs.
2	Devise environmentally acceptable and residue-free systems for fly control.
3	Devise means of control marketing eggs in a multi-aged layer complex when one house is infected with Low Pathogenic Avian Influenza (LPAI).
4	Identify an appropriate type of sample to take in the hatchery which will assist in understanding Salmonella transmission from hatch to the grower house. Determine if the sample type is adequate for a Salmonella surveillance program.
5	Devise systems to prevent starve-outs and/or injuries.
6	Devise environmentally acceptable working conditions for employees in alternative housing systems.
7	Develop effective, practical and economical strategies to eradicate Mycoplasma from multi-age housing systems.

Diseases

Rank	Research Needs Statement
1	Develop a live <i>Salmonella</i> vaccine that is equally effective across multiple serogroups.
2	Determine risk factors, epidemiology, pathogenesis, prevention, and control of the various clostridial diseases of poultry (gangrenous dermatitis, clostridial dermatitis, necrotic enteritis, focal duodenal necrosis, cholangiohepatitis, etc.).
3	Develop a live vaccine which will provide protection against current reovirus strains.
4	Devise improved methods for the diagnosis and control of variant strains of infectious bronchitis.
5	Develop improved Histomoniasis treatment and prevention options.
6	Devise methods for prevention/reduction of pathogenic bacteria colonizing poultry.
7	Enhanced Gut Health - Improve micro biome, including the mechanism and impact of prebiotics and probiotics; understanding host/pathogen interaction; understanding the role of viruses; develop strategies to manage gut health; improve diagnostics.
8	Determine the risk factors, epidemiology, and prevention of reovirus infection in broilers and meat turkeys.
9	Devise ways to improve the immune response of poultry through genetics, including resistance to colonization by <i>Salmonella</i> and <i>Campylobacter</i> .
10	Determine risk factors, epidemiology, pathogenesis, prevention and control of <i>Enterococcus</i> infection in chickens.
11	Determine risk factors, epidemiology, pathogenesis, prevention and control of <i>Campylobacter hepaticus</i> infection in chickens.
12	Determine Avian Metapneumovirus transmission vectors, mechanical and biological vectors.
13	Investigate Avian Metapneumovirus mitigation options such as vaccination (killed & modified-live) and prevention beyond biosecurity.

Environmental Management

Rank	Research Needs Statement
1	Develop best practices for peracetic acid use in poultry processing to optimize/balance use, pH, PAA dosage levels, food safety intervention, and wastewater impacts.
2	Devise methods for water reuse, conservation and recycling.
3	Development of a feed decontaminant/antimicrobial similar in cost and effectiveness as formaldehyde but with less concern regarding worker safety.
4	Identify alternatives for DAF skimmings management and recovery of beneficial materials.
5	Devise methods for odor and ammonia control from poultry production houses via diet manipulation, litter additives, etc.

Food Safety

Rank	Research Needs Statement
1	Determine safe and effective antimicrobial applications to reduce <i>Salmonella</i> and <i>Campylobacter</i> levels and/or prevalence associated with mechanically deboned poultry, poultry parts, and heat treated (Not-Ready-To-Eat) poultry products, as well as the raw materials used to produce them.
2	Determine pre-harvest <i>Salmonella</i> indicators that correlate to finished product (parts or grind).
3	Development of a <i>Salmonella</i> vaccine that is effective for group C <i>Salmonella</i> .
4	Develop post-chill handling methods to reduce microbial contamination.
5	Develop methods for cleaning deep skin <i>Salmonella</i> contamination in poultry carcasses or parts.
6	Devise methods for the prevention/reduction of pathogenic bacteria of food safety concern colonizing poultry.
7	Evaluate effectiveness of carcass dips/sprays in reducing microbial contamination.
8	Determine the portion of human <i>Salmonella</i> and <i>Campylobacter</i> infections that is scientifically linked to consumption of poultry products.
9	Develop novel methods for detecting foodborne pathogens.
10	Provide best practices for grinding - how does temperature, pressure, etc. affects <i>Salmonella</i> populations.
11	Estimate <i>Salmonella</i> and <i>Campylobacter</i> prevalence in poultry feeds and feed ingredients, and the significance/role in relation to <i>Salmonella</i> and <i>Campylobacter</i> prevalence in finished products.
12	Evaluate the critical contamination points between turkey live hang and post-chill, utilizing qualitative and quantitative data, and identify key locations for more targeted interventions.
13	Define the impact of cleaning catching and hauling equipment on bacterial load on carcasses, especially <i>Salmonella</i> and <i>Campylobacter</i> .
14	Devise rapid and precise enumeration methods to improve the detection of the most pathogenic <i>Salmonella</i> strains – those which pose the greatest risk to human health.

Hatchery Management

Rank	Research Needs Statement
1	Devise and validate enhanced hatching egg management and operational sanitation methods to improve microbiological quality of hatching eggs and chicks/poults while protecting worker safety.
2	Devise and validate measures to reduce stress and injuries in automated bird handling systems.
3	Evaluate the value of in-hatchery feeding of chicks.
4	Evaluate the effects of prolonged time lapse between poult hatching and placement in the field. Determine what the optimal time range is to place poults after hatching to achieve maximal well-being.
5	Develop alternative methods to enhance chick quality without the use of antibiotics.

Nutrition

Rank	Research Needs Statement
1	Define the optimal intestinal microflora for maximizing the genetic potential of current broiler and turkey strains.
2	Determine the impact that various ingredient combinations have on the microbial status of the bird.
3	Determine the influence of breeder nutrition on chick and poult performance.
4	Determine the optimal energy and protein needs of broiler breeders at various stages of production.
5	Define poultry feed formulations that reflect sustainable production parameters.
6	Define diets and withdrawal strategies to control contamination in processing.
7	Devise nutrition management programs to support extended lay in laying hens.
8	Define optimal protein (amino acid) and energy needs of broilers grown to various weights and marketing programs (deboning/whole birds) with modern genetics as well as slow growth broilers.
9	Determine the cost effectiveness of enzyme combinations that maximize energy and/or amino acid utilization from commonly fed feed ingredients.
10	Devise cost-effective ways to improve pellet quality.
11	Impact of varying levels of individual vitamins on performance, health, and livability of current broilers

Processing

Rank	Research Needs Statement
1	Determine additional automation capabilities in processing facilities from arrival of live birds through to packaging and dispatch.
2	Develop methods to prevent cross contamination and ingesta contamination leading to the elimination of adulterated final product.
3	Define the cause of "white striping" and "woody breast" and other myopathies in chicken breast meat and determine procedures to reduce its incidence.
4	Devise improved and rapid methods for the detection of metal fragments, bone, and other foreign materials in meat.
5	Define the effect of gas stunning on delay in defeathering, chilling, and meat quality in broilers and turkeys.
6	Devise technological methods that would allow plants to run a wider range of bird weights within the same processing facility during a crisis where there is a need to process birds at greater sizes/weights.
7	Determine the actual feasibility of irradiation of poultry meat.
8	Determine effects of preslaughter stress on feather release, moisture gain/retention, and muscle tissue quality.

Employee Safety & Health

Rank	Research Needs Statement
1	Industrial Hygiene monitoring and sampling protocols -- identify potential exposures and develop a protocol for determining permissible exposure levels and for determining required frequency and methodology for routine sampling -- including ammonia, chlorine, nuisance dusts, formaldehyde, carbon dioxide and a variety of airborne infectious diseases such as aspergillosis and histoplasmosis.
2	Identify existing and novel practices to prevent dissipation and spread of any public health virus aerosols from workers near one another in processing plants. Provide safety guidelines and design criteria for communal areas such as break rooms, bathrooms, etc.
3	Determine the incidence of repetitive motion disorders in catchers and live hang workers and develop strategies to minimize these conditions.