UNIVERSITY OF MARYLAND EXTENSION | AgFS Agriculture & Food Systems

COMMERCIAL POULTRY NEWS

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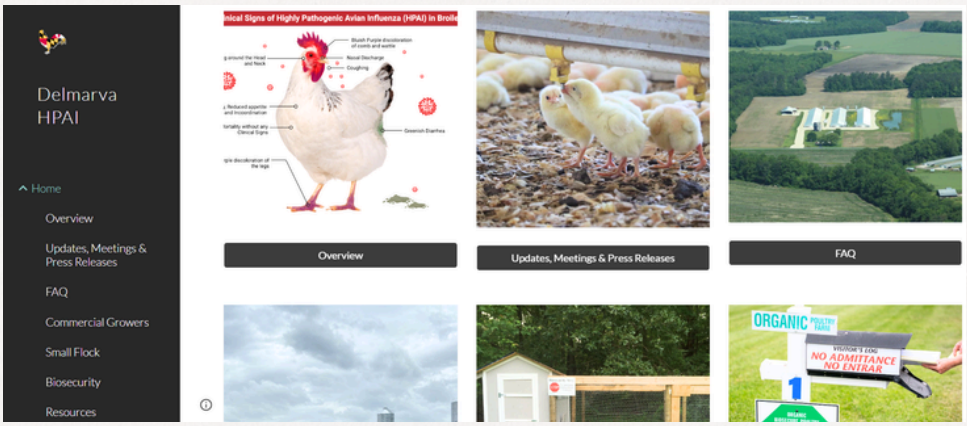

HPAI Resources and Reminders for Commercial Poultry Operations

This week's confirmed outbreak of highly pathogenic avian influenza (HPAI) at a commercial broiler farm in Worcester County is an important reminder to practice strict biosecurity every day. Review your farm's biosecurity plan with everyone who enters the property, limit visitors to essential personnel, and consistently follow your line-of-separation procedures. Use house-dedicated footwear and clean clothing, clean and disinfect equipment before bringing it onto the farm, and avoid tracking contamination from areas visited by waterfowl. Promptly clean up spilled feed, secure feed storage, and prevent contact with wild birds and rodents.

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HPAI Resources and Reminders for Commercial Poultry Operations (continued)

Monitor flock health closely and report unusual illness, sudden mortality, or changes in feed and water consumption immediately to your flock supervisor or veterinarian and MDA Animal Health at 410-841-5810.

For research-based information on HPAI, biosecurity, disease recognition, and outbreak response, visit the University of Maryland Extension HPAI resource page. https://extension.umd.edu/programs/agriculture-food-systems/program-areas/animal-science/maryland-poultry/highly-pathogenic-avian-influenza-hpai/

For quick updates and information shared by our team, bookmark our Delmarva HPAI information site. https://sites.google.com/terpmail.umd.edu/delmarvahpai/

Please reach out to our poultry Extension team with any questions or concerns. Protecting our poultry community takes consistent attention and cooperation from everyone—every farm, every house, every day.

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Plant-Based Polyphenols in Broiler Diets: What They Can and Can't Do

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As the poultry industry looks for ways to cut back on synthetic additives and antibiotics, many producers are asking whether plant-based polyphenols can help keep birds healthy and meat quality high. These natural compounds are found in a wide range of plants, including many herbal ingredients and fruit by-products that are already familiar to feed formulators. In human nutrition, they are best known as antioxidants, and researchers are now looking at how they might fit into broiler diets.

In fast-growing broilers, oxidative stress is a constant concern. Birds face pressure from rapid growth, heat stress and diets rich in polyunsaturated fats, all of which can lead to more reactive oxygen species than their natural defenses can handle. When that happens, immune function can suffer, gut integrity can be compromised and carcasses may show more lipid oxidation, which shortens shelf life and hurts meat color and flavor. Vitamin E and selenium have long been the backbone of antioxidant programs, but polyphenols are being evaluated as another tool to help manage this pressure.

Polyphenols can support the bird in several ways. They can help neutralize free radicals, bind pro-oxidant metals and support the bird's own antioxidant enzymes such as superoxide dismutase and glutathione peroxidase. Some polyphenols also interact with redox-sensitive signaling pathways that influence inflammation and cell survival, which may offer benefits beyond basic antioxidant activity.

Several studies show that polyphenols can improve antioxidant status and, in some cases, bird performance. In one trial, adding gallic acid to the diet reduced a common marker of lipid oxidation in blood, increased total antioxidant capacity and enzyme activity, and improved feed conversion at moderate inclusion rates. In another study, a commercial polyphenol blend improved growth and feed efficiency, enhanced antioxidant status in plasma, muscle and liver and reduced the severity of woody breast, with an optimal inclusion near 514 g per ton of feed.

These kinds of results suggest that, under the right conditions, polyphenols can help birds cope with stress while supporting meat quality through the supply chain. However, results with polyphenols are not always consistent from one trial or one farm to the next. One of the main challenges is product variability. Two products, both labeled as grape or tannin polyphenols, may differ greatly in composition and potency, depending on plant variety, growing conditions and how the product was processed and standardized. Bioavailability is another concern. Polyphenols can bind to proteins and other nutrients in the diet, which can limit how much of the active compound is absorbed and used by the bird.

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Plant-Based Polyphenols in Broiler Diets: What They Can and Can't Do (continued fom page 3)

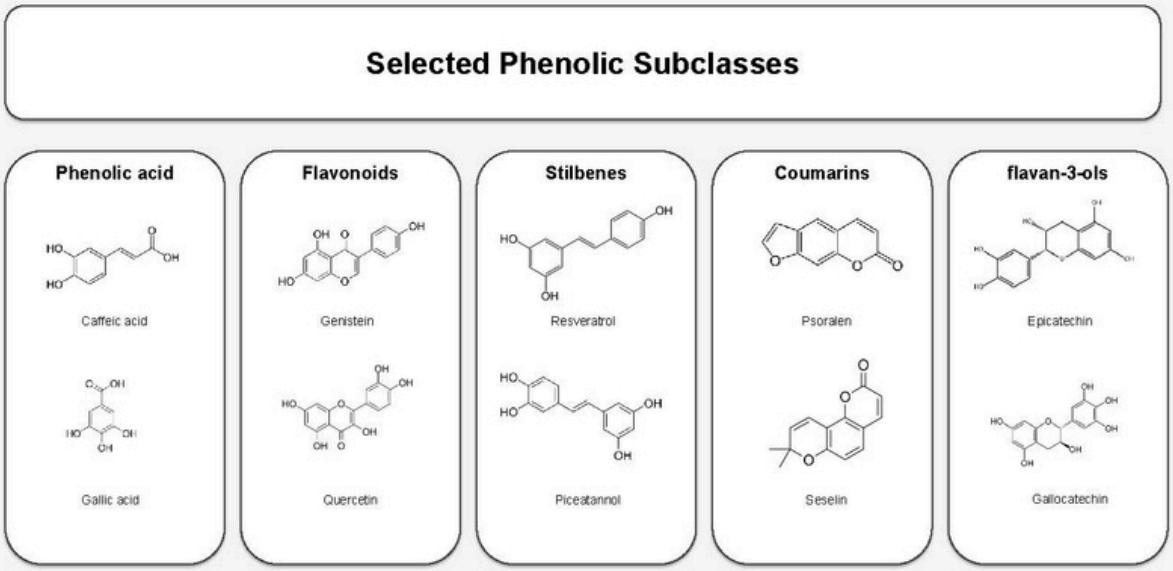
The production environment also plays a big role in how well polyphenols work. Under good management, moderate climate and balanced diets, baseline oxidative stress may be relatively low, so extra antioxidant support may not show much benefit in day-to-day performance. Under heat stress, or coccidial challenge, the same inclusion level may lead to more noticeable improvements in bird health and carcass quality. Genetics, age and sex add other layers of complexity, because they influence how birds absorb, metabolize and utilize polyphenols. This makes it risky to take results from one integrator or research trial and apply them directly to another system without local testing.

It is also important to remember that polyphenols are not always acting as "good" antioxidants. At high concentrations or in certain redox conditions, some polyphenols can become pro-oxidant or act as anti-nutritional factors. In those cases, more is definitely not better. Current work suggests there is an optimal window where polyphenols support the bird's antioxidant defenses without causing harm. Some benefits may even depend on the bird's gut microbiota.

For example, a metabolite called urolithin A, produced from tannic acid in the gut, has been shown to promote muscle satellite cell activity through the Akt1 pathway, which means responses can depend on whether the bird's microbiota can produce that metabolite in the first place.

@REALLYGREATSITE

For producers, the practical message is to treat plant polyphenols as one more tool, not a cure-all. Ask questions about the plant source, how the product is standardized and what data are available under conditions similar to your own operation. As the industry moves toward more precise management of bird health, including antioxidant support, gut health, microbiota management and heat stress control, well-characterized polyphenol products may earn a place in broiler feeding programs. To get the most out of them, they will need to be matched carefully to the right birds, doses and environments and used alongside, not instead of good management and proven nutrition.



Research to Reality: What New Poultry Science Means for Your Farm

Prepared by: Mostafa Ghanem, DVM, MS, PhD
University of Maryland, College Park

Article 3

Where Biosecurity Breaks Down: What Cameras Recorded at the Poultry House Door

Source:
Elbers & Gonzales, Pathogens (2025); sidebar: Schuft et al., Frontiers in Veterinary Science (2026)

Why This Study Matters

The first two articles in this series showed that bird flu pressure from wild birds is high and that day-to-day farm practices decide whether the virus gets inside the house. Most farms have a written biosecurity plan. This study asked a simpler question: what actually happens at the house door when nobody is checking? The answer matters because a single missed step on a high-risk day may be enough to let the virus in.

What the Researchers Studied

Researchers in the Netherlands put video cameras at the entrances and anterooms of seven indoor poultry farms that had recently had HPAI: two broiler, two-layer, two breeder, and one duck farm. Every entry and exit was recorded day and night for 4 to 6 weeks. The researchers checked whether people changed footwear at each barrier, washed their hands, and put on coveralls. They also watched busy events such as chick placement. Farmers, family members, transporters, and visitors were all observed. The study did not test whether any single breach caused an infection, and it was not an inspection of individual farms.

Key Findings (What the Science Shows)

- **Most traffic through the door is the farm's own people**

– About 59% of movements were by the farmer and 28% by family members working on the farm. Transporters made up 9% and outside visitors 4%.

- **Footwear and hands were the weak points**

– Footwear was not changed at the first barrier in about 1 of every 3 movements, and the rate was similar at the barrier into the bird area.

– Handwashing was skipped in about 3 of every 10 entries and was almost never done on exit. Coveralls, by contrast, were rarely skipped (about 3%).

- **Only about one in three entries was fully correct**

– When all four steps were considered together, only about one-third of movements were done completely right.

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Research to Reality: What New Poultry Science Means for Your Farm Article 3 (continued)

• **Chick placement was a major gap**
– During placement, transporters entered houses with trolleys and farmers helped push them in. No one changed or disinfected footwear, and trolley wheels were not disinfected.
• **Good compliance is achievable, and it starts with layout**
– One broiler farm followed the steps consistently. Each of its houses had an anteroom with two physical barriers and a clear separation between the dirty and clean sides.

What This Means for Growers

- The biggest risk is routine traffic. The people who enter most often, the grower and family, set the farm's real biosecurity level.
- Footwear changes and handwashing deserve the most attention. Coveralls alone do not make an entry safe.
- Placement, catch, cleanout, and delivery days should be treated as high-risk events. Plan ahead who enters, which boots they wear, and how carts and equipment wheels are cleaned.
- Entry design should make the right behavior the easy behavior. A bench or physical line where boots are changed, with nothing from the dirty side crossing over, helps.
- Breaches were more common in the afternoon. This suggests a quick self-check at the door is most valuable later in the day, when people are tired or rushed.
- Crews and drivers should be held to the same standard as the grower, and they need the same setup to make it possible.

This research supports what Extension and USDA guidance have emphasized for years: biosecurity works only when it is done the same way, every time, at every entry.

What This Study Does Not Mean

- This study does not show that these breaches caused the HPAI infections on these farms.
- This does not mean Delmarva farms have the same compliance levels. The study included only seven Dutch farms, and most farms invited (20 of 27) declined to take part.
- This does not mean coveralls or other well-followed steps can be dropped.
- This does not mean cameras are required. Video was used here as a research tool.
- This does not mean growers are careless. Even farms that had just been through an outbreak slipped, which shows that routine steps fade without regular reinforcement.

Take-Home Message

Biosecurity rarely fails because of a missing plan. It fails in small, repeated moments at the door, most often with footwear and hands, and most often by the people who go in every day. One farm in this study showed that consistent compliance is possible when the entry layout makes the correct steps simple. Consistency, not complexity, is what protects the flock.

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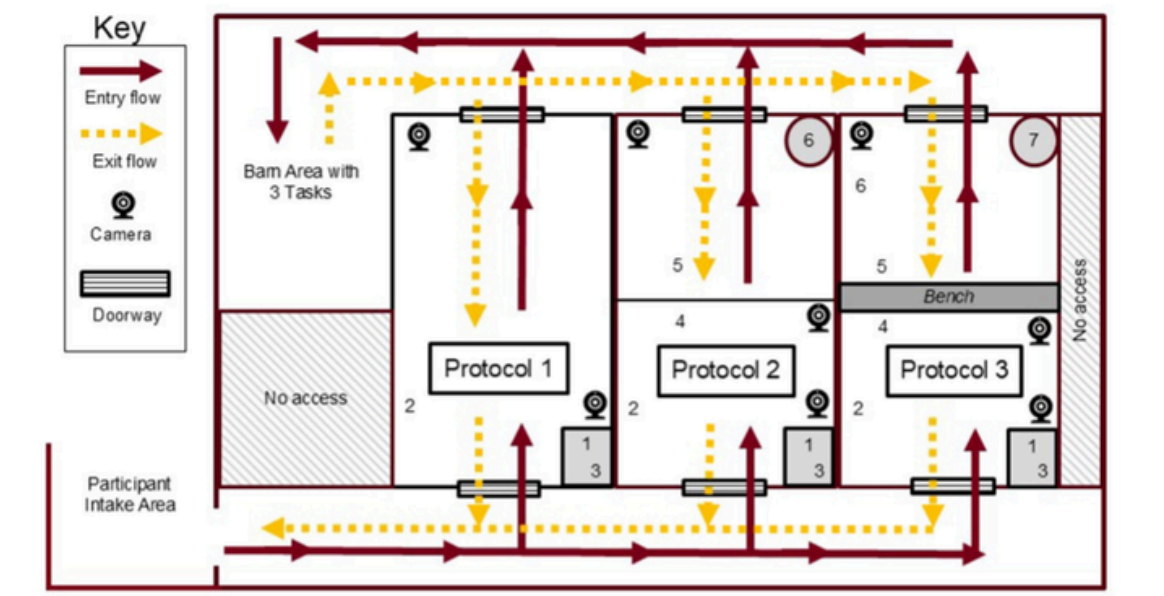
Research to Reality: What New Poultry Science Means for Your Farm Article 3 (continued)

Simpler Entries, Fewer Mistakes

A 2026 University of Minnesota study tested 59 people walking through mock barn entries with 3-, 6-, and 7-step protocols.

- More steps meant more mistakes. On exit, the 7-step protocol produced nearly twice as many errors as the 3-step protocol.
- Mistakes increased after about a month without practice. Entry errors rose by more than a third on the return visit.
- How people were taught (video, reading, or listening) made no difference.
- The most common errors were doing steps in the wrong order and letting dirty boot soles touch the clean side.
- Practical steps: **keep entry to the essential steps in a fixed order, mark the clean/dirty line physically, and refresh crews before placement and catch. The authors suggest that a simple picture guide at the door may help, but they did not test this.**



Plan view diagram picturing the three protocols, camera placement, directional flow, and number of steps performed in the simulated barn entry and exit research. Numbers within each protocol indicate what step and the location within the entry or exit it should be performed. Schuft et al., 2026

Source Citation
Elbers A.R.W., Gonzales J.L. Identification and characterization of biosecurity breaches on poultry farms with a recent history of highly pathogenic avian influenza virus infection determined by video camera monitoring in the Netherlands. Pathogens 14(8):751 (2025). Open access: https://doi.org/10.3390/pathogens14080751

Schuft A., Noll S., Janni K., Hetchler B., Martinson K., Cortus E. Evaluating biosecure entry and exit protocols and education methods in a mock livestock facility. Frontiers in Veterinary Science 13:1724406 (2026). Open access: https://doi.org/10.3389/fvets.2026.1724406

Research to Reality | Biosecurity at the Door

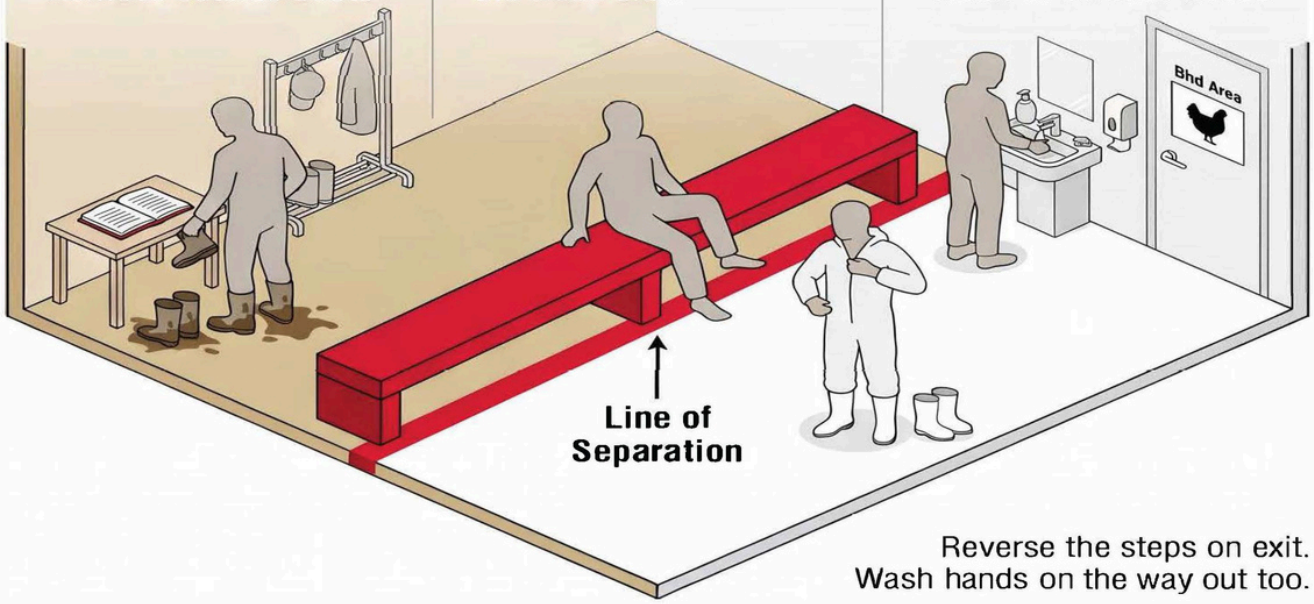
UNIVERSITY OF MARYLAND EXTENSION

Commercial poultry farm anteroom

Step 1 – Dirty side:
- Log visit
- Leave personal items
- Remove outside boots

Step 2 – Cross the line:
Swing legs over the bench. Outside boots never touch the clean side.

Step 3 – Clean side:
- Put on farm boots and coveralls
- Wash or sanitize hands



Reverse the steps on exit. Wash hands on the way out too.

What cameras recorded on 7 Dutch poultry farms

1



87% of trips through the door were the farmer and family

2



Boots not changed in ~1 of every 3 trips

3



Hands not washed in ~3 of every 10 entries, almost never on exit

4



Only **34%** of trips had every step done right

Chick placement day was a gap: **no boot changes** and **no trolley wheel cleaning** were seen.

Simpler, fixed routines help
- More steps meant more mistakes
- Errors rose after about a month without practice
- Most errors: steps out of order, dirty soles on the clean floor

Practical tip: use a bench or physical line, keep the steps in the same order every time, and refresh crews before placement and catch.

Sources: Elbers & Gonzales, Pathogens 14:751 (2025); Schuft et al., Front. Vet. Sci. 15:1724406 (2026), University of Mar

Gemini Notebook

Cleaning Radiant Heaters

Dr. Jon Moyle, Poultry Extension Sepcialist University of Maryland

Making small improvements can lead to big improvements. For example, tightening fan belts and replacing worn pulleys can lead to big improvements in ventilation efficiency. A similar simple improvement can improve heating efficiency. Local research from the University of Delaware and University of Maryland Extension has shown that simply cleaning radiant heater reflectors in broiler houses can raise floor surface temperatures by 2.5 to 5.4 degrees Fahrenheit, delivering more heat right where young chicks need it most. Tests by heater manufacturers back this up, with one company reporting that annual reflector cleaning alone can boost radiant heat output by more than 9 percent.

Radiant tube heaters have become a common sight in modern broiler houses across the Delmarva region. Instead of just warming the air, they heat the floor, litter and birds directly, helping chicks stay comfortable during those first critical days after placement. The metal reflectors above the tubes act like mirrors, directing heat down toward the birds. When those reflectors get coated with dust, cobwebs and dirt, they stop reflecting as much heat and start absorbing it instead. That means warmer ceilings, cooler litter and, ultimately, less efficient heating.

A local field study in two commercial broiler houses shows how much difference a good cleaning can make. On one farm the researchers removed the aluminum reflectors from three radiant tube heaters, washed them with an organic foaming cleaner and clear water, and then re-installed them. On the second farm they simply spayed the cleaner on the reflectors then rinsed it off after a couple minutes, leaving the reflectors in place. Using an infrared camera, they compared litter temperatures before and after cleaning. After the reflectors were cleaned, average floor temperatures increased by 2.5 to 5.4 degrees Fahrenheit under the same conditions.

Heater manufacturers share the same message. One company notes that simply cleaning reflectors once a year can increase the amount of radiant heat the system produces by more than 9 percent, and that well-designed, highly reflective surfaces can direct nearly all of the tube's energy into the bird area. Maintenance bulletins warn that "a dirty reflector will adversely impact the output and performance of an infrared heater" and recommend wiping reflectors down at least annually with a damp cloth or sponge. For poultry growers dealing with dusty houses and heavy litter loads, that recommendation may need to be followed even more often.

Fortunately, most of the steps that keep heaters working well are simple and inexpensive. Before cold weather sets in, turn off the power, let heaters cool completely, and then brush or wipe dust and cobwebs from reflectors and tubes. While you are at it, check for loose hardware, look for worn fan belts and worn pulleys and replace any damaged parts. These jobs do not require new technology or big capital investments, just time and attention.

In conclusion, making small simple improvements, such as washing tube heater reflectors can lead to improved efficiency and better housing conditions for your birds.