Vet Med Cooperative Extension

Winter 2023

Connection

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For questions or comments, please contact Maurice Pitesky at 530-752-3215 or mepitesky@ucdavis.edu

Call for Survey Participation

Parasite Control in Organic Livestock Production

Dr. Alda Pires, Associate Agronomist and Specialist, UC Davis School of Veterinary Medicine Cooperative Extension Dairy Cow Management, **Dr. Noelia Silva Del Rio**, Assistant Specialist,UC Davis School of Veterinary Medicine Cooperative Extension Epidemiology and Food Safety

The following email template may be used for distributing information among your peers who qualify for survey participation. **This survey is estimated to take roughly 10-15 minutes.** Please feel free to share among any organic livestock owners that you may know!

Subject: Parasite Control in Organic Livestock Production -Survey

Dear Livestock Organic Farmer,

In the past several years American demand for organically produced animal products has increased tremendously leading to the subsequent boom in the number of organic farms. However, under organic production systems the use of dewormers drugs is regulated, challenging the success of these operations.

At UC Davis School of Veterinary Medicine and UC Agriculture Natural Resources Cooperative Extension, we have designed a survey aimed at cattle, sheep, or goat producers that are Certified Organic, in transition to be certified, or implementing organic practices. Our goal is to learn about: a) dewormers drugs used and the perceived efficacy, and b) integrated parasite management practices and their perceived efficacy.

Survey results will help us to identify critical areas that need additional research or extension services related to parasites management in organic production.

The questionnaire will take approximately **10-15 min** of your time. All responses are anonymous; no identifying information will be collected. The survey will remain open through **April 15th, 2023**.

https://ucdavis.co1.qualtrics.com/jfe/form/SV_77pA9H94xKMA27s

Thank you for contributing, we highly value your input. Please forward to others and encourage participation. If you have any questions, comments, or concerns please contact the principal investigators Dr. Alda Pires pireslab@ucdavis.edu and Dr. Noelia Silva del Rio, nsilvadelrio@ucdavis.edu or Teresa Miranda at teresa.fernandes.miranda@gmail.com.

Improving Poultry Profitability

Production and Economics Are Like Two Strong Wings

Mrs. Ann Baier, NCAT Agriculture Specialist, **Ms. Faye Duan**, Assistant Specialist, **Dr. Maurice Pitesky**, Associate Professor, UC Davis School of Veterinary Medicine Cooperative Extension Poultry Lab

"If I work really hard and take good care of my birds, the business part will work out, right?"

"Production and Economics Are Like Two Strong Wings"

Well, actually....no! Enthusiasm and hard work are necessary elements but they alone are not sufficient to launch and sustain a viable agricultural business. Production systems need to work in practice on the ground and make sense for the people involved—and it's got to pencil out financially.

Practical production and business management capacities are like two wings of a bird; both are needed to start and sustain a viable business. Raising poultry on pasture, or in rotation with other crops, holds great potential for producing nutrient-dense meat or eggs, building soil health and fertility, and improving farm profitability. Designing and managing an integrated crop and livestock system requires practical on-the-ground production skills, as well as clear understanding of site-specific economic considerations.

UC Davis, Iowa State, University of Kentucky and the National Center for Appropriate Technology (NCAT) have been awarded an **USDA Beginning Farmer and Rancher Development (BFRDP)** grant to support beginning farmers interested in farming systems that integrate growing crops and raising poultry on pasture.

We invite you to get involved!

We'll be working with aspiring, beginning, and experienced integrated crop and poultry farmers, in partnership with university extension, farmer organizations, policy advocates, and community groups in California, Iowa, and Kentucky.

This effort leverages an USDA-Organic Agriculture Research and Extension grant started in 2019 titled "Integrating vegetable, poultry, and cover cropping practices to enhance resiliency in organic production systems" lead by Dr. Ajay Nair at Iowa State University. Findings from the field trials regarding biotic and abiotic soil management, food safety, economic and productivity-based measurements associated with integrative farming resulting from this earlier grant will be used to develop extension resources for aspiring beginning farmers under our new three-year project—**Two Strong Wings, Cover Crops & Veggies: Developing the Next Generation of Integrative Farmers in California, Iowa and Kentucky.**

Improving Poultry Profitability

Continued

Over the course of this project, we'll address the themes of:

1. Pastured poultry husbandry and pasture management
2. Integrated poultry husbandry and pasture management
3. Housing, equipment, and predator management
4. Food safety, handling, and processing regulations related to eggs and meat, and crops grown on the same land as poultry
5. Environmental management and stewardship of natural resources including soil
6. Business management, record-keeping, branding and marketing

Practical information and multi-directional learning are watchwords for this project. Workshops, farm visits, and field days will provide opportunities to address relevant production and economic topics in the context of the real-life challenges and opportunities of farmers within unique climatic, cultural, market, and regulatory contexts of different regions. Farmers have essential experience, perspective, knowledge, and insights. Research and extension people have data from preliminary experimental findings. Together, they can discuss how the current state of the science and industry is—or could be—applicable to beginning farmers.

In-person and remote events in California, Iowa, and Kentucky (to the extent that human and poultry health conditions allow) will provide space and time for farmers, researchers, farmer support organizations, regulators, and policy advocates to meet each other and talk. The project aspires to help participants connect with networks of mutual learning and ongoing support that can extend beyond the activities of this project.

If you would like to connect with this work, please get in touch with any of the following:

Dr. Maurice Pitesky at mepitesky@ucdavis.edu at UC Davis
Dr. Ajay Nair at nairajay@iastate.edu at Iowa State University
Dr. David Gonthier at djgo227@g.uky.edu at the University of Kentucky
Mrs. Ann Baier at annb@ncat.org at the Nat'l Center for Appropriate Tech
Ms. Faye Duan at fduan@ucdavis.edu is coordinating the project

If you are in any other state, you are welcome to participate in remote workshops. We are emphasizing inclusion of traditionally underserved populations—limited-resource and socially disadvantaged beginning farmers and ranchers, including Black, Indigenous and people of color, farmworkers, immigrants, and military veterans who are aspiring or beginning farmers. We seek appropriate ways to address the real needs of farmers as they start or improve their crops and poultry (whether for meat or eggs) farming businesses.

Stay tuned for more information!

This article was adapted from a blog produced by Ann Baier the National Center for Appropriate Technology. ATTRA.NCAT.ORG.

The project will be developing practical, relevant, and scientifically sound information products that will be shared on our websites and social media platforms, including publications, podcasts, videos, blogs, and newsletters. We welcome feedback and questions from anyone seeking to develop more productive and profitable integrated crop and poultry farming enterprises.

UC DAVIS UNIVERSITY OF CALIFORNIA

University of Kentucky

IOWA STATE UNIVERSITY

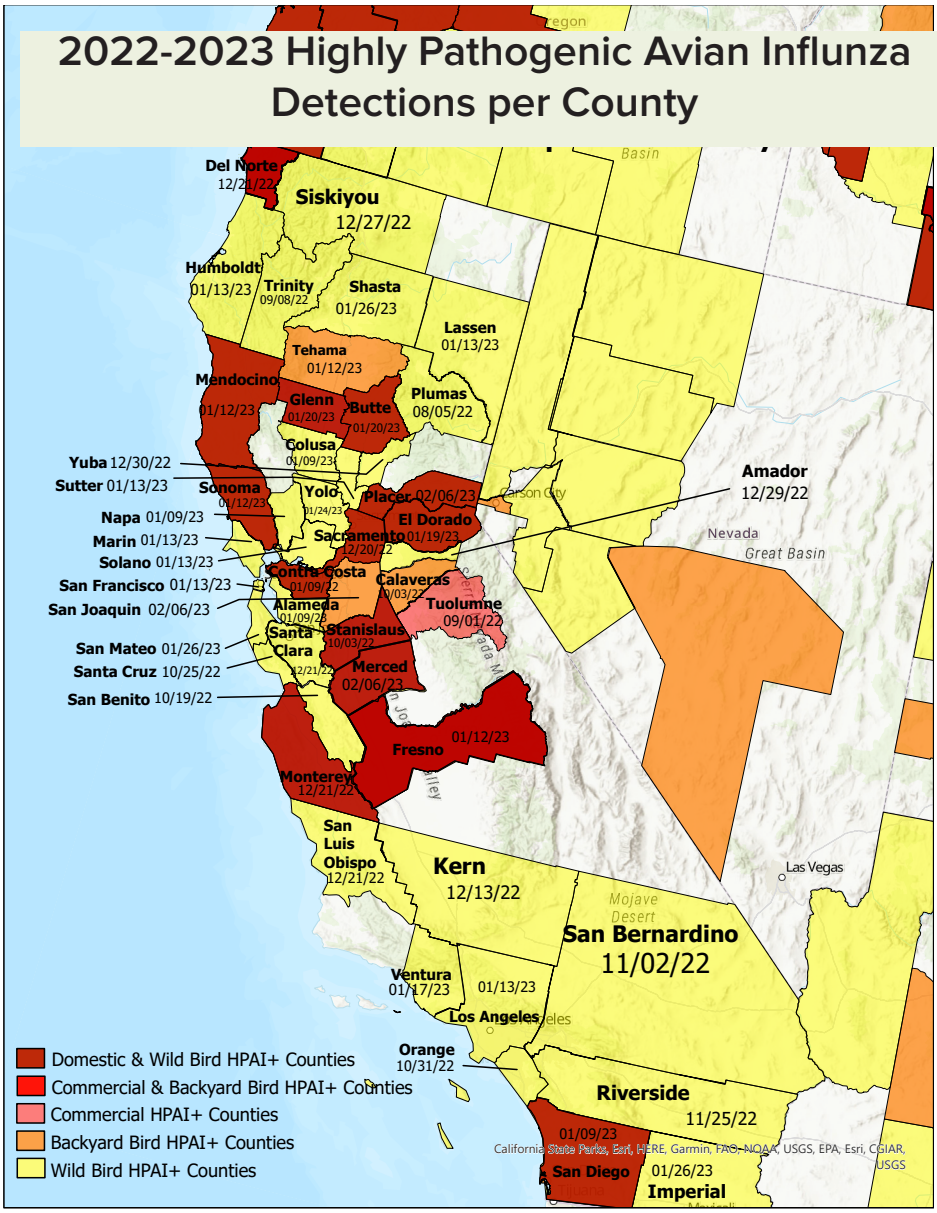
NCAT NATIONAL CENTER FOR APPROPRIATE TECHNOLOGY

Winter HPAI Update

Mr. Brock Riggs, Lab Manager, UC Davis School of Veterinary Medicine Cooperative Extension Poultry Lab

Highly Pathogenic Avian Influenza (HPAI) has continued to persist in wild bird populations and affect domestic poultry in the United States through winter.

Since HPAI was first observed in a wild bird in South Carolina in January 2022, the disease has spread like a wildfire. Over 58 million commercial and backyard birds have been reported as infected to the United States Department of Agriculture (USDA APHIS), along with over 6,000 wild bird detections (and countless numbers of wild birds going undetected).



In California alone, there have been detections in 46 counties, as HPAI swept through resident and migrating waterfowl populations. It has spread to many backyard flocks and commercial facilities within the state since the beginning of August 2022, causing the euthanization of nearly 1 million turkeys and chickens.

As migrations again increase as birds return to northern breeding grounds with spring right around the corner, the risk of exposure to poultry flocks heightens. Not only has the virus been observed to be carried by waterfowl, but also by raptors, scavengers, and songbirds this year. There have also been cases discovered in predatory mammals that take advantage of sick or dying wild birds. As birds migrate north to their respective breeding areas, they will travel near and often through properties where poultry are housed, carrying the virus with them and depositing it as they go along. The best way to avoid an outbreak in a facility is heightened biosecurity, and keeping your birds indoors. Wearing a dedicated set of clothes and shoes, along with disposable coveralls and plastic covers is the best way to keep HPAI away from poultry. This seemingly continual epidemic has been much worse than in years past, and will likely push forward as migrations persist. By enforcing the best biosecurity you can, your birds can stay protected from HPAI.

What is Antimicrobial Resistance?

Mr. Alec Michael, Graduate Student, UC Davis School of Veterinary Medicine Cooperative Extension Poultry Lab,
Mr. Zachary Tobar, Graduate student, UC Davis School of Veterinary Medicine Cooperative Extension Poultry

Antimicrobial resistance, or AMR, is the result of bacteria, viruses, and other germs changing over time to longer respond to the medicines we use to treat the infections they cause.

How does this happen? When we expose germs, like bacteria, to antimicrobial drugs, the drug kills many of the bacteria present, but some survive and multiply. These surviving germs often have something in their DNA that allows them to resist the effects of the antimicrobial that was used. These germs are then able to pass along their resistance traits to other germs. This means that while antimicrobial drugs are one of our best tools for fighting germs, they also drive increasing levels of resistance by allowing the most resistant germs to survive and spread.

AMR in bacteria is primarily a result of two things: genes and mutations. Genes are segments of DNA that serve as a blueprint for building proteins. Resistance genes contain information for building proteins that help germs fight antimicrobial drugs and can be passed between germs. Mutations are changes in the DNA which, if in genes, change how the germ makes proteins. These altered proteins ultimately change how the germ acts and responds to things like antibiotics. Mutations may arise spontaneously as the germ grows and reproduces, or they may be induced by things like mutagenic drugs or radiation.

Part of the research we performed here looked at taking soil samples from backyards raising chickens using antibiotics and those that did not. The idea being that chickens being fed antibiotics would have both trace amounts of antibiotics in their feces and have some antibiotic resistant bacteria in their feces. These would subsequently go into the soil and may be able to be detected. When we took soil samples for each site, we attempted to get a soil sample every three months for a year between 2018 and 2019.

One of the most common ways to measure phenotypic resistance is to identify the lowest concentration of a particular antimicrobial stops a bacterium of interest from growing, which is the minimum inhibitory concentration (MIC). As part of our study on AMR in backyard poultry, we found MICs for four types of bacteria isolated from the same places sampled for examining genotypic resistance: Salmonella, Campylobacter, Escherichia coli (more commonly known as E. coli), and Enterococcus. Some of these bacteria may sound familiar because Salmonella, Campylobacter, and some strains of E. coli are common foodborne pathogens.

We found similar amounts of resistance for all four bacteria among backyards that used antimicrobials and among backyards that did not. For E. coli and Campylobacter, the most common resistance we identified was to tetracycline, while no resistance was observed among the five isolates of Salmonella we collected. Overall, phenotypic resistance among bacteria from the backyard poultry premises was generally similar to or slightly lower than that of bacteria from retail chickens and chicken parts tested by the National Antimicrobial Resistance Monitoring System.

To reduce the threat posed by AMR, it is important to follow veterinary guidance for using antimicrobials responsibly. For more information on antimicrobial stewardship (AUS), see the CDFA AUS page at
https://www.cdfa.ca.gov/AHFSS/aus/Stewardship.html

A Somber Subject

Humane Endings in the Veterinary Field

Ms. Theresa Valdez, Creative Director, UC Davis School of Veterinary Medicine Cooperative Extension Poultry Lab

Small animal, livestock veterinarians and related professionals spoke in detail about the negative impacts end-of-ife procedures has on them, students and clients alike.

Representatives Ms. Theresa Valdez and Mr. Joseph Gendreau from the UC Davis Cooperative Extension Poultry Lab attended the 2023 Humane Endings Symposium by the American Veterinary Medical Association (AVMA). They presented a poster titled “Effective Depopulation in Non-commercial Poultry: Leveraging Online Conversations”.

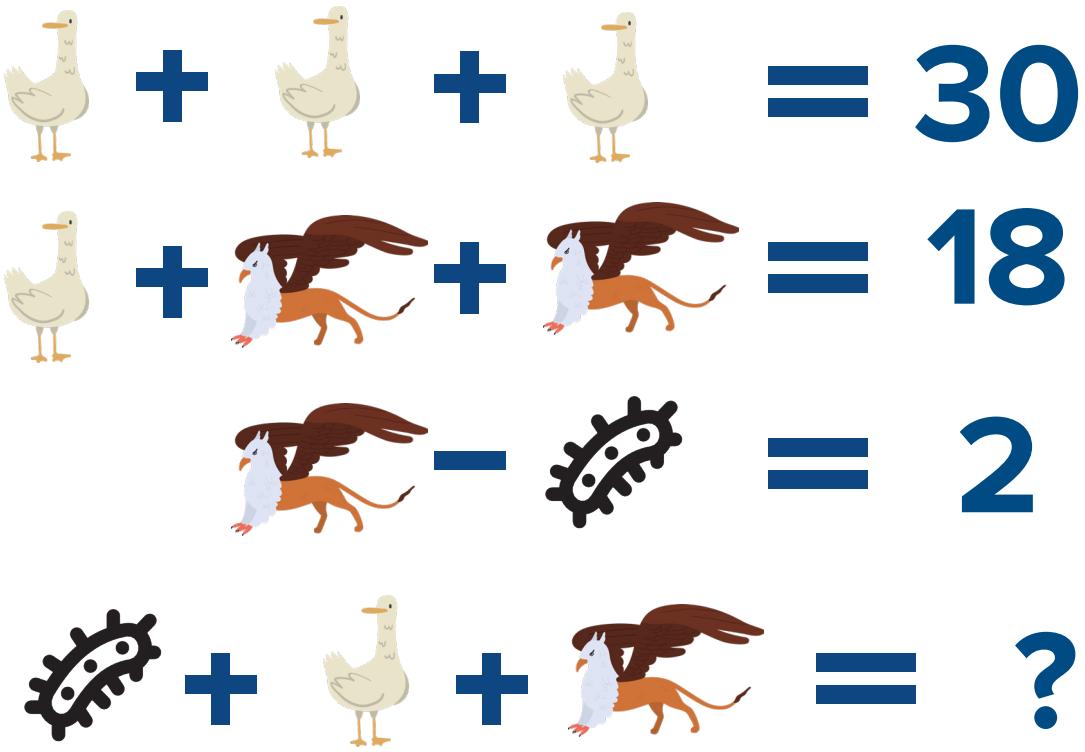
A lot of interdisciplinary work goes on at the UCD CE Poultry Lab that isn’t purely veterinary science. Researchers and veterinarians alike need to grow accustomed to talking about and improving the whole food system, including delicate topics such as processing, euthanasia and depopulation. At the symposium, that exact conversation was facilitated with sessions that aimed to *“explore topics related to end-of-life procedures, harmonization of voluntary guidance and regulations for these activities, and how involvement in end-of-life activities affects people psychologically.”*

At a small-scale, individually caring for the welfare of livestock animals up until their end-of-life might seem straightforward. But when the stakes are raised and whole systems of food security are compromised, farmers in charge of intricate operations have a lot to consider. That’s why scientific meetings and discussions like this are so valuable. Private and livestock veterinarians, scientists and those related to the agriculture field alike brought up questions and concerns about these topics typically too uncomfortable to bring up when working. The most touching session in my opinion talked about the mental toil that end-of-life procedures have on the people involved, regardless of position. From a food-animal perspective, it reminds us that while farmers have businesses to run, they also deeply care about the animals they raise.

This article is adapted from a post on the UCD CE Poultry Lab instagram account. Follow them @ucdpiteskylab for the most current news in the lab!

A Puzzling Situation

Can you find the value of each symbol and solve the final line?



Veterinary Medicine Extension

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UC Agriculture & Natural Resources

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Connection is a publication of the University of California Davis, Veterinary Medicine Cooperative Extension.

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