UCDAVIS VETERINARY MEDICINE

Poultry Ponderings

Edition 20 · Summer 2020

A quarterly newsletter detailing poultry related work, research, and events in California

Inside this issue:

Questions or Comments?

Contact Maurice Pitesky at mepitesky@ucdavis.edu or 530-752-3215

Editor: Odette Clamp

UC Davis Pastured Poultry Farm Donates Chicken Coop to Farm Burned by LNU Complex Fires

Following the recent LNU Lightning Complex Fires, the UC Davis Pastured Poultry Farm donated one of their chicken coops to Eaton Ranch with the help of the Woodland-based Centers for Land Based Learning.

West of Vacaville, Eaton Ranch is home to a farming family of four who have 15 acres of walnuts and more than 30 laying hens. During the recent wildfires, their barn, storage sheds, and chicken coop burned down. Thanks to the collaborative efforts of CLBL and UC Davis, a coop was donated to within the week and the chickens now have a place to call home.

Madison Ekin, one of the owners said, "We can't even begin to describe how thankful we are for this act of kindness and generosity during these stressful times."

The UC Davis Pastured Poultry Farm is a collaborative project between the school of Engineering and the UC Davis School of Veterinary Medicine. The coop that was donated was co-designed and built by faculty and students alike, including Deb Niemierer and her student Ruby Yu from the College of Engineering.

— Maurice Pitesky

A) *Eaton Ranch following the recent fires.*

B) *Picking up the coop at the UC Davis Pastured Poultry Farm*

C) *Placing the coop at the Eaton Ranch for their laying hens.*

Does Livestock Grazing Benefit Organic Crops?

Multistate Research Team Explores Impacts

Livestock grazing could be beneficial for organic farming systems. To see if the practice poses any food safety risks, university, government and non-profit partners will receive a nearly $1 million U.S. Department of Agriculture Specialty Crop Multi-state Program grant to study the impacts of live-stock grazing of cover crops on bacterial popula-tion dynamics, soil building and environmental health.

“Fresh produce growers and their advisors will benefit from learning about the impacts of inte-grating livestock grazing with winter cover crop management on soil health including soil organic matter, nutrient cycling and reduced nitrate leach-ing, and potential food safety risks discovered in this project to make decisions on adoption, man-agement, and environmental benefits of winter cover crop management in annual vegetable sys-tems,” said Alda Pires, University of California Co-operative Extension specialist in the UC Davis School of Veterinary Medicine and principle inves-tigator in the study.

The $999,985 project, titled “Evaluating the food safety impacts of cover-crop grazing in fresh pro-duce systems to improve cover crop adoption, crop-livestock integration, and soil health,” is be-ing led by the University of California in partner-ship with The Organic Center, USDA’s Agricultural Research Service, the University of Maryland Eastern Shore, the University of Minnesota and California Department of Food and Agriculture.

Livestock grazing of cover crops could be benefi-cial for organic systems because it maximizes the strengths of cover cropping, including enhanced soil fertility, structure, water infiltration and stor-age, and reduced nitrate leaching, while address-ing challenges that have limited the expansion of cover crop use. These challenges include con-cerns over cover-crop water use and nutrient im-mobilization, which could result in nutrient defi-ciencies and increase input costs for the crops that follow.

Many growers consider livestock grazing of cover-cropped fields in fresh produce operations as a way to enhance soil health and environmental benefits by increasing carbon inputs and nutrient cycling.

“This study will allow farmers to complement the benefits of both cover cropping and livestock in-tegration into cropping systems,” said Jessica Shade, The Organic Center’s director of science programs. “Like cover cropping, integrating ani-mals into cropping systems can be beneficial to farm environmental impacts and profitability by improving nutrient cycling, reducing dependence on external inputs, improving soil health and di-versifying profit streams.”

Despite the well-known benefits of animal-crop integration, concerns over microbial food safety are limiting the expansion of animal integration into cropping systems. Recent research has shown that integrated crop-animal sys-tems perform well in keeping pathogens out of meat, but additional research is needed to exam-ine the synergistic impacts of the use of livestock for cover crop grazing on ecosystem health and food safety.

(continue onto next page)

UC Davis researcher Alda Pires has received a new grant to study affects of crop-livestock integration

Does Livestock Grazing Benefit Organic Crops?

Multistate Research Team Explores Impacts cont.

This project will fill this research need by examining food pathogen persistence and survival in soil and transfer to vegetable crops, and the relationship between soil health properties, environmental factors and pathogen survival in grazed cover crop-vegetable production in three states.

The researchers will graze sheep in cover-cropped fields before planting spinach and cucumber. They will measure changes in soil health indicators over two years of grazed cover crop-vegetable production and assess benefits and potential tradeoffs of vegetable cash crop productivity. The results will be compared to vegetable fields planted in tilled cover crops and a fallow field.

Pires' research team is multi-institutional, multiregional and interdisciplinary, including

- Michele Jay-Russell, Western Center for Food Safety, UC Davis
- Nicole Tautges, Agricultural Sustainability Institute, UC Davis
- Amelie Gaudin, UC Davis
- Patricia Millner, USDA-ARS
- Fawzy Hashem, University of Maryland-Eastern Shore
- Paulo Pagliari, University of Minnesota
- Jessica Shade, The Organic Center

The Organic Center will lead outreach efforts focusing on the benefits of grazing and food safety impacts such as online tools, outreach events, conference presentations, and publications targeted to growers, policymakers and consumers.

UC Agriculture and Natural Resources brings the power of UC research in agriculture, natural resources, nutrition and youth development to local communities to improve the lives of all Californians. Learn more at ucanr.edu.

— Alda Pires

Check out this upcoming webinar!

Speakers will address questions on growing produce or raising poultry in post-fire impacted areas.

To Register, visit: ucanr.edu/postfiresoilsafety

For more info visit: https://ucanr.edu/sites/poultry/

Community Corner

Welcome to Community Corner! *The spirit of Cooperative Extension is to apply science based discoveries into real- world solutions around the globe. Community Corner is a new addition to our newsletter that will highlight the various ways in which our extension faculty and fellow scientists use novel approaches to help communities in need domestically and internationally.*

Innovation Through Small Scale Farming

Have you ever heard there is enough food around the world to feed every human being? While this is true, there are a few additional facts we need to consider. If we did a rough calculation and assumed that everyone would get a portion of the available food, there might be enough biomass to provide sufficient raw calories. However, this would not include substantial nutrients for a healthy diet. Food production focuses on the manufacturing of many food additive substances and carb heavy consumables. While long term solutions will require entire holistic shifts to our food production system (according to the FAO[1]), there is still a need for immediate solutions to the disproportional availability of food.

A growing number of agricultural programs (FAO, USAID) are focusing on small scale farming to provide nutritious food to those in food deserts, resource starved locations, and even urban areas. Small scale agriculture has no set definition as its representation will change in different regions and with different systems. A small scale poultry operation can be less than 3,000 birds in California, but could mean 300 birds in Nepal. The main goal is to grow small, community or individually sustained batches of food to distribute at a more local level or to sell to a larger distributor and promote revenue.

The Pitesky Lab is striving to push forward and innovate in research areas including small scale farming with poultry. While we have some experience with applied small scale poultry systems, we have found the need for integrated systems including both animals and produce. Sarai Acosta, graduate student in the Pitesky lab, is using her knowledge of small scale rotational poultry to apply integrated farming techniques. She will conduct a 3 year project on a small plot at UC Davis's Russel Ranch. Using half an acre of land to measure the impacts of poultry mixed with crop rotation she hopes to find a solution for regional nutrient deficiencies. Poultry has been a longtime source of quick proteins and fats for women in children around the globe, serving not only as a catalyst for health but for economic stability as well. By pairing poultry and crops we hope to find feasible ways to increase produce production, decrease costs by replacing traditional fertilizers with poultry manure, and reducing overall damage to crops through integrated pest management.

We hope to see if these small scale rotational systems can be used to alleviate nutrient and food stress in inner cities and resource poor areas alike. Downstream Ms. Acosta hopes to implement these practices in community gardening, urban agriculture, as well as continue to serve developing countries abroad.

— *Sarai Acosta*

1) Food and Agriculture Organization

Poultry Webinar

Want to learn more about keeping your chickens happy and healthy?
Or how to navigate poultry sales?

Topics

Navigating Direct to Consumer Sales of Poultry Products

Relevant Poultry Diseases: What you Need to Know to Prevent em'

Basics of Husbandry to Raise Healthy Birds

When: September 25, 2020 | 5:30—7:30 PM PST

UCDAVIS VETERINARY MEDICINE
Population Health and Reproduction

UC CE

MODOC HARVEST
LOCAL FOOD + EDUCATION

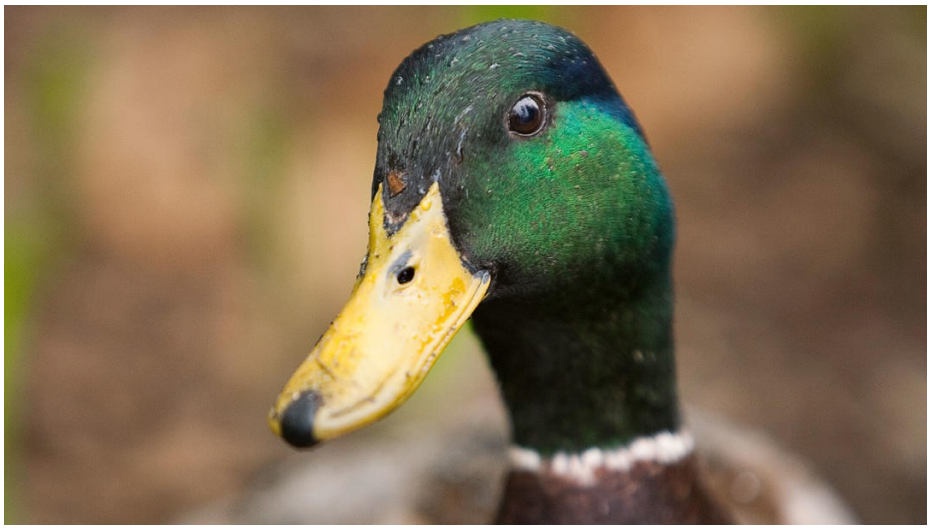
NCAT

ATTRA
SUSTAINABLE AGRICULTURE

Visit our website at ucanr.edu/sites/poultry/ to Register!

Connecting Spread of Avian Influenza and Movement of Waterfowl

(And Why Poultry Owners Should Care)



Researchers at UC Davis are collaborating with USGS and University of Delaware to develop a model for predicting waterfowl movement, and by extension, the movement of avian influenza viruses. (Photo credit: National Audubon Society)

During the outbreak of highly pathogenic avian influenza (HPAI) in 2014-2015, around 50 million domestic poultry were killed, either through mandatory depopulation or succumbing to the disease. In addition to HPAI, low pathogenic avian influenza (LPAI) is also a significant issue from a morbidity and production perspective. Although both LPAI or HPAI AI present a huge potential danger for poultry, there is currently only minimal surveillance of avian influenza viruses (AIV) in waterfowl (the primary reservoir) in the U.S.

The Pitesky Lab at UC Davis, in collaboration with Sam Díaz-Muñoz (UCD College of Biological Sciences), University of Delaware and USGS, has received a new 4-year USDA funded grant that focuses on further developing remote sensing based tools (radar, satellite, ground based monitors and telemetry) to monitor waterfowl populations in the Central Valley of California and the Delmarva Peninsula in order to assess risk of geographical interface between waterfowl and commercial poultry. This data will be further leveraged by the development of new molecular methods (see more on these approaches here) of AI detection in both waterfowl and their environment.

To visit the current version of the California Waterfowl Tracker please click here.

— Odette Clamp and Maurice Pitesky

UCD & CDFA Want Your Ideas On Preparing for the Next Poultry Disease Outbreak

As part of a recently granted 2-year USDA grant UCD titled *"Preparation and Response to Catastrophic Animal Disease: Removing Critical Obstacles to Readiness in the Western States"* UCD is trying to improve emergency response to Foreign Animal Diseases (FADs) like virulent Newcastle Disease (vND) and Highly Pathogenic Avian Influenza (HPAI). By filling out a short on-line survey you can help California better respond to our next poultry disease outbreak. Recent outbreaks of HPAI and vND have resulted in mortality in the mil-

(continue onto next page)

UCD & CDFA Want Your Ideas On Preparing for the Next Poultry Disease Outbreak cont.

lions and millions of dollars of economic damage. When facing a FAD outbreak, the most effective action producers can take is to implement an emergency enhanced biosecurity plan. While some poultry facilities, particularly larger ones have already developed such emergency plans, many mid-sized and smaller ones have not. USDA, CDFA and UCD are partnering to develop tools to make it easier to create emergency plans.

In order to better understand what elements of response are needed a survey has been developed. The results of this survey will help direct efforts towards the most effective materials. Regardless of whether you work in the poultry industry, academic or regulatory communities your responses are important. This survey has only 20 questions and should only take about 15 minutes to complete. The survey is on-line and can be accessed by clicking **here**.

— Mike Payne, Rodrigo Gallardo, and

Maurice Pitesky

*If you have any questions about the survey or the project please contact Dr. Michael Payne at **mpayne@ucdavis.edu***

Dr. Cluck's Trivia

Last quarter's trivia: ***What bird lays the largest egg relative to its body size?***

The Kiwi!

The kiwi's egg is on average 15-20% of the mothers body weight, compared to the 2% in ostriches. (*kiwisforkiwi.org*)

(Photo: National Audubon Society)

Thank you for participating! Congrats to David and Mark for getting the right answer!

Seeking Stakeholders for Avian Influenza Waterfowl Tracker Advisory Group

Recently UC Davis Vet Med Extension, USGS and the University of Delaware received a 4-year USDA grant titled "*Real-time Waterfowl Mapping Web Application: Validating a Critical Tool for a New Era of Avian Influenza Surveillance to Improve Food Security in Commercial Poultry".*

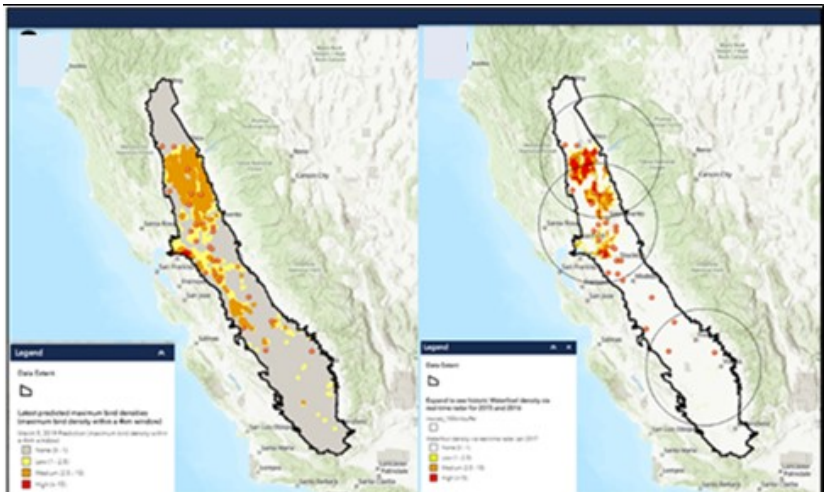
This project builds off of a 3-year UC-ANR project to further develop remote sensing technologies including weather radar, satellite imagery and telemetry of waterfowl to map waterfowl habitat in close proximity to commercial poultry in the Central Valley of California and the Delmarva Peninsula in Delaware (both large poultry growing areas). In addition the project leverages our previous UC-ANR research on detection of avian influenza virus (AIV) in wetlands using ultrafiltration and a novel PCR approach refined in Sam Diaz's lab at UCD that is more able to detect the wide range of AI viruses in the environment vs standard approaches.

You can visit the California Waterfowl Tracker and read the article on detecting avian influenza in California wetlands targeted via remote sensing here .

Our goal is to develop a "real-time" mapping tool that allows stakeholders the ability to better understand their proximity to waterfowl and AIV in the environment. If successful, we hope to expand the system across the U.S.

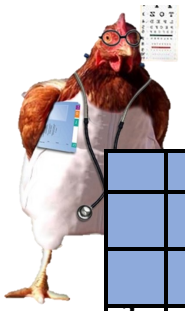
What we need: We need stakeholders (industry and government) who can meet 1-2x a year to provide feedback on the functionality of the web-tools we are developing. Our goal is to make the tools practical and easy to use as currently, they are not. We will be offering an annual $300 honorarium for up to 3 hours of work (a maximum of two 1.5 hr meetings per year).

— Brian Ladman and Maurice Pitesky



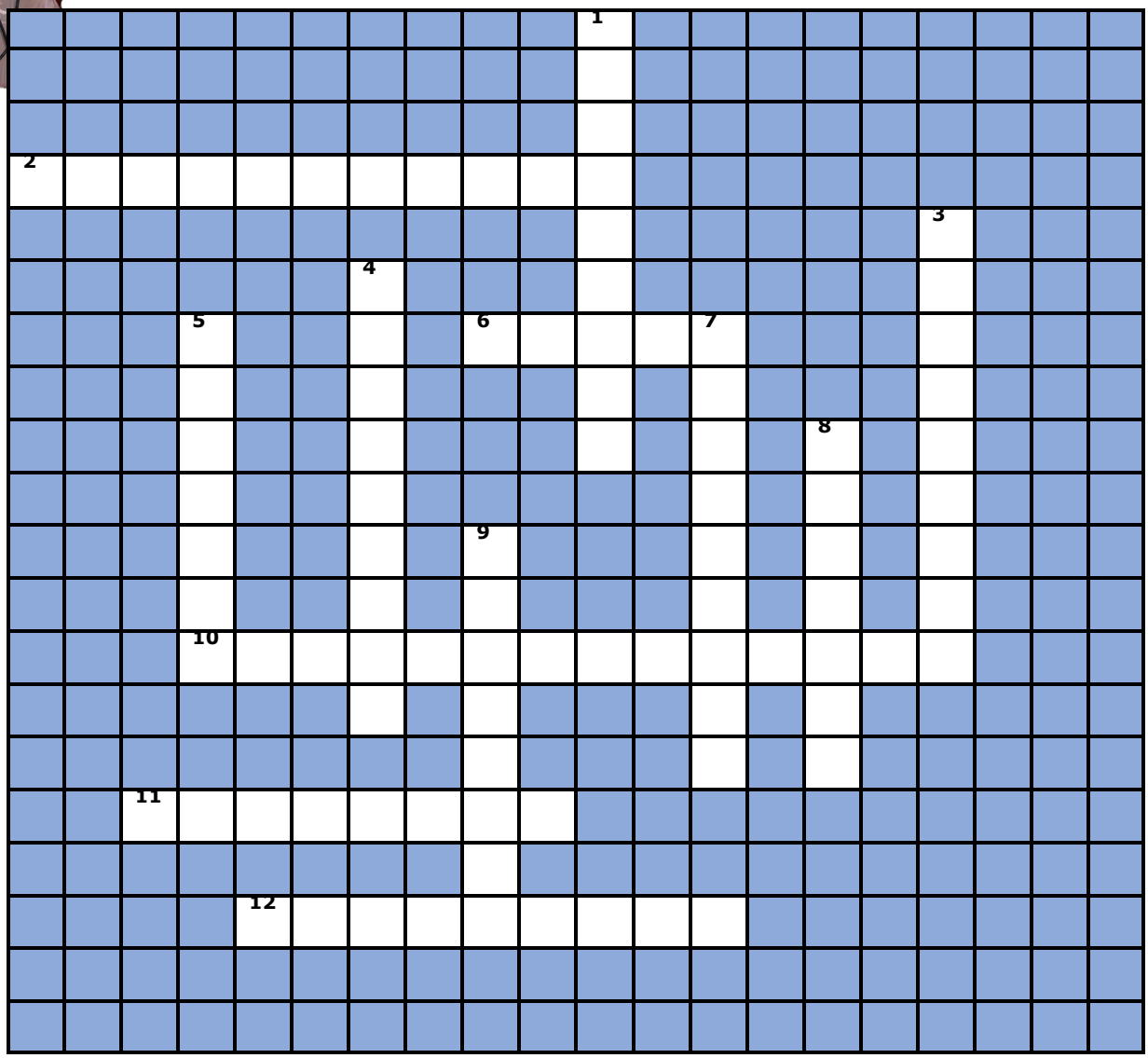
Screenshots from the California Waterfowl Tracker. The figure on he left shows a tool that makes daily predictions on waterfowl location and density between November and March using satellite imagery. The figure on the right shows historic radar data of waterfowl roosting. The tool will be expanded to the Delmarva Peninsula along the Atlantic Coast. We are seeking industry and government stakeholder for an advisory group to make the app more useful to the poultry industry.

If interested please contact Brian Ladman (bladman@udel.edu) and/or Maurice Pitesky (mepitesky@ucdavis.edu).



Dr. Cluck's Puzzle

Help Dr. Cluck find the right words! Terms are based on the articles found in this issue!



Down:

1. A word for geese and ducks
3. The practice of keeping our animals/plants happy and healthy
4. All of us together create a —
5. "I'm late, I'm late! For a very important date! No time to say 'hello, goodbye,' I'm late, I'm late, I'm late!"
7. In orbit I can tell you what the weather's like
8. A favorite past time for cows and sheep
9. Turkeys and -

Across:

2. Cultivating crops and raising livestock equals —
6. Grown for profit or provisions
10. Another word for longevity and/or feasibility
11. Bacteria or viruses or other microorganisms that can cause harm
12. Domesticated animals raised in an agricultural setting