Spring 2021

Vet Med Cooperative Extension

Connection

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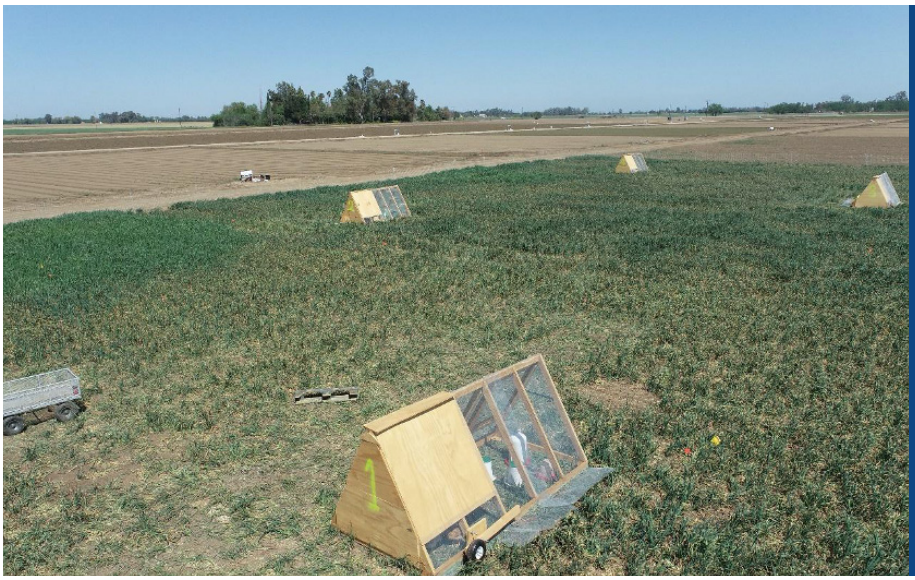
Chickens-Tomatoes-Cover Crop, Chickens-Tomatoes-Cover Crop...

By Faye Duan, Jeff Mitchell, and Maurice Pitesky

Integrating poultry into crop production is as old as agriculture itself. The ability to grow multiple crops has provided nutritious food to farmers, their families and their communities for millennium. The earliest farmers learned what crops and livestock were most complementary and productive. Challenges including geography, drought and disease have challenged farmers to produce food sustainably and for a profit. These challenges continue today and hence identifying the best varieties of crops and animals and optimizing their productivity in a sustainable manner epitomizes the ultimate goal of land grant universities like UC Davis.

To that point UC Davis along with Iowa State and University of Kentucky are collaborating on regional studies to quantify the potential for chickens to be part of safe and sustainable commercial organic vegetable production. The USDA-funded study was launched by Iowa State University horticulture professor Ajay Nair. The project also includes UC Cooperative Extension specialists Maurice Pitesky and Jeff Mitchell, based at UC Davis, and University of Kentucky entomology professor David Gonthier. UC Davis International Agricultural Development (IAD) graduate student Faye Duan stated “While these systems are not a new idea, there is currently little scientific information for how best to integrate poultry and crops with respect to production, food safety, soil management and economics. This study is designed to measure multiple outcomes in California, Iowa and Kentucky and provide practical recommendations to interested farmers.”

The Nobel Laureate Norman Borlaug considered the “Father of the Green Revolution” was pragmatic in the sense that he focused on finding high yield disease resistant crops. This project attempts to figure out how we can achieve similar advances in agriculture more sustainably by using a rotational system that maximizes the synergies between crops and chickens in the fertile Central Valley of California.



Drone image of the pastured chickens on cover-crop at the Russell Ranch Sustainable Agriculture Facility which is a 300-acre facility that is part of the UC Davis campus. The chicken “tractors” built by students Mallory Phillips and Trevor Krivens house approximately 30 birds each. Each day the tractors are moved to a new plot of land where chickens are able to fertigate the land while supplementing their regular ration of feed with legumes in the cover crop. (Picture taken by Jeff Mitchell, UC-Cooperative Extension).

Antimicrobial Drug Usage in Broiler Chicken Plummets

By Emmanuel Okello

Antimicrobial drug use in livestock is currently a major public concern due to the associated risk of development and spread of drug resistant pathogens to both animal and huma populations. To mitigate antibiotic resistance in food animals, the US Food and Drug Administration (FDA) introduced a series of guidelines and regulatory changes between 2012-2017 that increased veterinary oversight on the distribution and use of medically important antimicrobial drugs (important human drugs) in poultry and prohibited the use of such drugs for growth promotion. In California, the state Senate Bill (SB) 27 incorporated and expanded on existing elements of the FDA regulations putting more restrictions on the use of antibiotics in poultry and other livestock species.

Recently, a University of Minnesota led research team conducted a study to estimate the antimicrobial drug use in the US poultry production during the period 2013-2017. The study utilized annual on-farm drug use data that was voluntarily collected from commercial producers, representing more than four-fifths of US broiler production. The findings showed that antimicrobial drugs were mainly used in cases of clostridial diseases (necrotic enteritis and gangrenous dermatitis) and E. coli infections (colibacillosis). Antimicrobials were also used in the hatcheries to control infections transmitted through eggs or the environment. There was a marked decline in the overall usage of antimicrobial drugs in US broiler chicken production during the study period. Major reductions in antimicrobial use were reported for tetracycline (95%) and virginiamycin (60%) which are both important human drugs. Reduced use were also reported for water-soluble penicillin (21%), lincomycin (58%), and sulfonamide (72%). There was a marked decrease in the number of chicks that received hatchery antimicrobials (from 93% to 17%), and the use of gentamicin (commonly used antimicrobial in hatchery) decreased by 75% during the study period.

The decreased use of antimicrobials over the study period could be attributed to the regulatory changes, improved health management practices that reduced need for antimicrobial use, and increased consumers' preference for chicken raised without antibiotics. Improved health management is the most important indicator for good stewardship that needs emphasis.

Although the study focused on commercial broilers, certain scenarios such as the downstream effect of antibiotics used in hatchery and increased veterinary oversight on drugs use applies to small operations as well, e.g. backyard poultry. In California, guidelines on antimicrobial stewardship are provided as online resources by the California Department of Food and Agriculture (CDFA) Antimicrobial Use and Stewardship (AUS) program.

VetMed Extension Launches Survey on Wildfire Impacts

By Gaby Maier

In last year's wildfire season 8,500 fires burned more than 4% of California land. It is hard to forget the sights and smells of those events, with ash falling from the skies, sunlight being blocked by a smoke-filled atmosphere. For a while, air quality in California was the worst anywhere on the planet and many of us kept watching PurpleAir or other air quality meters to see how bad it was on any given day. As is the case in a typical California fire season, many pets and livestock became victims to these fires. The School of Veterinary Medicine sends out clinicians and students to help with the response to fires every year. Many animals receive treatment in the field that may not otherwise be reachable, especially where evacuation orders are in place.

Direct impacts from fires include not only obvious burn injuries to animals but also the loss of a natural food source from fires or pasture contamination from ash that may lead to sudden switches in feed with associated digestive upsets. Udders or male reproductive organs that are exposed and may get damaged in a fire may lead to starving offspring unable to nurse or male infertility respectively.

Last year's fire season in particular has raised the question of how much air quality is affecting health and productivity in our livestock species. Smoke particulates can penetrate deep into lungs and may cause acute respiratory distress or secondary bacterial pneumonia. Just the sheer stress from fires and possible evacuations may precipitate respiratory disease in livestock, as it impacts their immune defenses. Anecdotally, some producers have reported an increase in pneumonia, a decrease in fertility, stunted growth in offspring and other negative outcomes, but it is difficult to extrapolate from a few personal impressions to the bigger picture.

It is not easy to find an answer to the question of how big the short and long-term direct and indirect impacts from wildfires are on ruminants, since these are not reportable events and no official surveillance is in place. For this reason, UC Davis VetMed Extension has launched a producer survey, open through June 2021, to find out more about the direct and indirect effects of wildfires on ruminant livestock species, i.e beef and dairy cattle, sheep and goats. The survey takes only about 3-5 minutes to complete and can be found at: Impacts from wildfires on livestock health and production

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Results from the survey may help us give better advice and guidance to producers in the wake of a fire season and help make California more resilient to future fire events. We are collaborating with Oregon State University on this project, as Oregon also suffered from widespread wildfires during 2020, but we welcome responses from producers in other Western states. We need to engage as many producers as possible, even if they do not believe that they had any negative impacts from wildfires. The information from the survey will stay anonymous and will be summarized to protect the identity of any participants.

While the threat from droughts, climate change, and wildfires may not go away any time soon, understanding the magnitude of possible sequelae is an important step in better preparing for the future.

Find wildfire resources on our website:

https://ucanr.edu/sites/fire/Prepare/

Did you know?

In 2020, 10.1 million acres burned in California due to wildfires — that is compared to 4.7 million acres burned in 2019

Source: https://www.iii.org/fact-statistic/facts-statistics-wildfires

Got Chickens and Crops?

You are invited to participate in a research survey about integrating vegetable and poultry production through rotating poultry and vegetables on the same land.

The purpose of this study is to understand vegetable growers' experiences and perceptions of integrating poultry into vegetable rotations and their interest in engaging with the research. This study is funded by the United States Department of Agriculture (USDA) Organic Research and Education Initiative.

If you agree to participate, you will be asked to complete a short survey (approximately five minutes). We do not anticipate that you will experience any risks or discomfort from participating.

This survey is anonymous, meaning we will not collect any identifying information, like your name. If you would like to get involved in the research through on-farm trials or joining the advisory board or enter a drawing, we will collect your name via a separate link to keep your name separate from your survey answers.

Anonymous data you provide may be shared with funding agencies, if requested.

Participating in this study is completely voluntary. You may choose not to take part in the study or to stop participating at any time, for any reason, without penalty or negative consequences. You can skip any questions that you do not wish to answer.

If you choose to complete the survey, you will have the opportunity to enter a drawing to win one of four $25 gift cards.

If you have any questions regarding this survey, please contact Maurice Pitesky by email at mepitesky@ucdavis.edu or phone at 530-219-1407.

If you have any questions about your rights or treatment as a research participant in this study, please contact the University of California Davis, Institutional Review Board at 916 703 9158 or HS-IRBEducation@ucdavis.edu

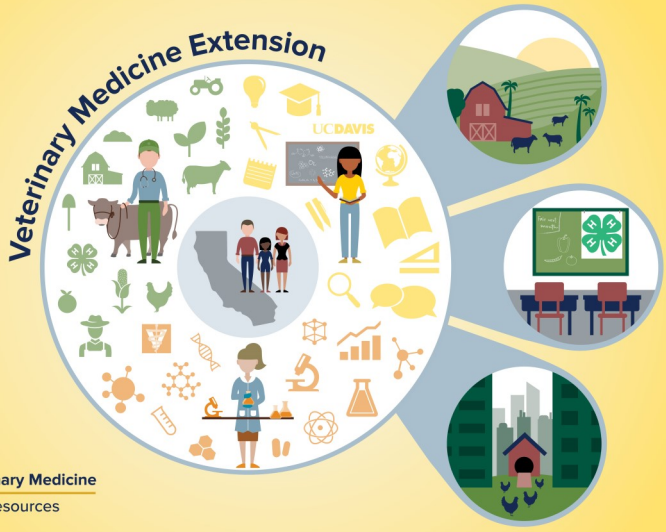
Click here for a link to the survey

Need Gear Recommendations for Raising Poultry?

Ever felt overwhelmed by all the options for chicken coops, bird feed, or cleaning gear? Don't worry, we've all been there. Luckily, we've got a great resource for you.

Jackie Reeves from Wirecutter recently spoke to two avian experts here from the UC Davis School of Veterinary Medicine, Michelle Hawkins and Maurice Pitesky, to get their opinions on some of the best gear in the market for raising poultry. The article on Wirecutter also features some great tips for chicken first aid, and even some book recomendations for the aspiring farmer in you!

Click here to read the article on Wirecutter!



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