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UC Davis tests ‘eggmobile’ for pastured poultry

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The eggmobile at the new research poultry farm at UC Davis is built for 150 pastured hens and includes portable shade structures that sit outside the barn to provide additional protection for the birds.
Photo/Ching Lee

The barn itself features automatic, battery-operated doors that close at night.
Photo/Ching Lee

Graduate student Naomi Dailey, who did some of the initial research on California pastured-poultry farms, observes a young layer on the 4-1/2 acre pasture the university has dedicated to the research farm.
Photo/Ching Lee

UC Davis students Naomi Dailey, second from left, Peter Dailey and Mitchell McCarthy talk with Solano County farmer Nigel Walker of Eatwell Farm in Dixon about the eggmobile they built. Walker’s diversified farm has been raising pastured poultry for more than 20 years.
Photo/Ching Lee

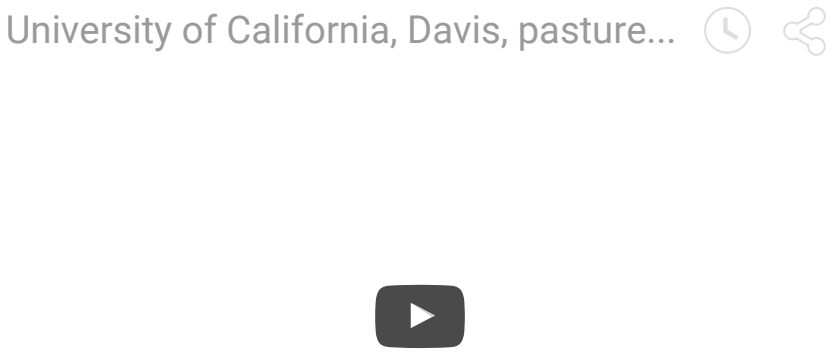
The chickens being raised on the new research poultry farm at the University of California, Davis,

remain a few months away from producing their first eggs. But all 150 of the young layers are getting used to their new home and surroundings—a red barn on wheels dubbed the "eggmobile" that sits on 4-1/2 acres dedicated to studying poultry raised on pasture.

Designed and built by students, the eggmobile is a centerpiece of the research farm and addresses a key challenge for pastured poultry farmers: loss of birds through predation.

With recent changes to how poultry is raised due to implementation of Proposition 2 and the growth of pasture-based production systems, the UC Davis poultry farm is trying to bridge a resource gap for a rising but underserved segment of the state's poultry sector: nontraditional, smaller farms that historically have not sought help from the university's extension service, said Maurice Pitesky, a UC Cooperative Extension poultry specialist and a lead researcher on the project.

"It's taken more effort on our end to reach out to these folks to see what their problems are, and for us to really appreciate the challenges they have and how unique their farming systems are," he said.



Though construction of the eggmobile took place during the summer and land for the project was secured in January, interest for this type of research has been brewing for a while, said Carine Elkhoraibi, a staff analyst involved in the project. Researchers met with some of the state's pastured-poultry farmers in 2014 to discuss their needs and areas in which they would like help, she added.

By employing the expertise of faculty and students from a number of different backgrounds and disciplines—including veterinary medicine, engineering, animal science and plant science—Pitesky said the project is also working to solve problems related to food safety, animal welfare, disease control, environmental impacts and production efficiency.

Some of the initial research involved visiting 11 different California pastured-poultry farms to gain a sense of what producers were doing and how their operations worked, and to gather ideas for the kind of mobile chicken barn students would build, said Naomi Dailey, a graduate student who did the farm visits and who now manages the research farm.

Researchers found that although many of the farmers are very knowledgeable about their flocks, they were reluctant to use technology such as apps and computer spreadsheets common on larger commercial farms, Elkhoraibi said.

"They're not able to tell you exactly what their feed conversion ratio is, how many eggs are laid per hen," she said. "They don't even know the size of their flock, because it's really hard to keep track of numbers when you have so many chickens and they go in and out all the time."

Dailey said while this was surprising, it's also understandable because of the open nature of pastured-poultry systems.

"It's not contained in a barn or in cages," she said. "Your birds are all outside during the day. Some farmers I visited didn't even close the doors at night, so the birds were totally exposed to whatever decided to wander across the property that evening."

Pitesky said predation affects a farm's productivity and sustainability. If farmers cannot account for their birds, they also don't have a grasp of their production and how to price their eggs appropriately.

There are also pasture management issues with food safety implications, such as when the birds are grazing on land that will be used for growing crops.

"A lot of this stuff at this point is done kind of by feel," Pitesky said. "There's a lot to be said for farming by feel, but we want to employ a little more science into those kind of decisions and decision making."

The idea of a portable henhouse is not new; many people credit Virginia farmer and author Joel Salatin for inspiring the concept and coining the term "eggmobile." The UC Davis eggmobile was modeled after different ones that already exist on California farms—taking some of their components and improving on the design, Dailey said.

Engineering students Peter Dailey, who is Naomi's husband, and Mitchell McCarthy were the lead designers on the project and built the eggmobile for less than $6,000. Complete with automatic, battery-operated doors that close at night, the unit provides overnight shelter and protection for the birds, and its portability allows easy rotation to different parts of the pasture, which has portable electric fencing to deter predators. The students also built portable shade structures that sit on the pasture and double as protection for the hens from hawks and other birds of prey.

Unlike some mobile coops that use wired floors to allow manure to drop to the ground, McCarthy said the UC unit has solid floors with a trap door for easy cleaning. The top half of the barn is open for ventilation, but tarps are used as window covering to keep out wind and rain, and a pulley system allows the tarps to easily open and close, he added. The barn also features an automatic watering system and modular, roll-out nest boxes that will be installed in the coming months when the birds are closer to laying age. McCarthy said he expects the hens will produce about 130 eggs a day.

In terms of biosecurity, pastured-poultry systems are at a higher risk for exposure to wildlife diseases such as highly pathogenic avian influenza, Pitesky said. For this reason, researchers designed the eggmobile so that it can double as a permanent barn in case they need to keep the birds inside for an extended period of time in the event of a disease outbreak.

As a pastured-poultry producer in Yolo County, Dan Jones said the method has become increasingly popular as demand for pastured eggs "has gone through the roof." He built his first mobile chicken coop about four years ago with 200 birds. He now raises 3,000 chickens and is in the process of putting 3,000 more out to pasture on a different ranch. He's also gone through five different iterations of the housing, still trying to make improvements. His farm was one of the ones UC researchers visited.

Jones said he's looking forward to going to the UC Davis poultry farm to check what the students have done with the eggmobile and to "using them more as a resource and continuing to learn and run a better farm."

"There are so many things we can do to the chicken coops just to make things more efficient and better for the chickens," he said.

Pitesky said UC researchers are exploring other types of eggmobiles, such as smaller ones that could be moved by hand, as they experiment with different sizes of flocks. If funding allows, the research farm would like to expand into broiler flocks, heritage turkeys and backyard birds, Elkhoraibi added.

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