Media Contact: John Lovett jlovett@uark.edu 479-502-9712 [@ArkAgResearch](https://twitter.com/ArkAgResearch)

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# Arkansas poultry stays strong in 2021. Division of Agriculture works to keep it that way with sustainability and animal well-being initiatives

By John Lovett

U of A System Division of Agriculture

## Fast facts

* Poultry remains No. 1 agriculture commodity in Arkansas
* Arkansas Agricultural Experiment Station research supports sustainability efforts in poultry industry
* Center for Food Animal Well-Being getting new director

(1,078 words)

FAYETTEVILLE, Ark. — The University of Arkansas System Division of Agriculture supports several initiatives to ensure the state’s poultry industry continues to grow with a forward-looking focus on environmental sustainability and animal well-being.

Poultry is the No. 1 agricultural commodity for Arkansas with broiler production accounting for a majority of the $3.7 billion in poultry cash receipts in 2020. It amounts to about half of the state’s total agriculture cash receipts, according to [The Poultry Federation](https://www.thepoultryfederation.com/resources/facts-figures).

Arkansas is the No. 3 broiler producer in the nation and the segment supports over 151,000 jobs in the state, the U.S. Department of Agriculture reported in April 2021. Over 6,500 farms produce some type of poultry in Arkansas, and broilers remain the most-produced commodity with about 1 billion broilers grown annually, The Poultry Federation adds.

The past year’s poultry production is expected to provide a “bump” to the state’s overall agriculture-based income, according to James Mitchell, assistant professor and livestock economist.

“Modest year-over-year growth in broiler production should translate into a bit of a bump in the state’s 2021 farm income compared to 2020,” Mitchell writes in the Fryar Risk Management Center of Excellence [2021 Markets in Review](https://5016712135-my.sharepoint.com/personal/jlovett_uada_edu/Documents/Desktop/2021%20Markets%20in%20Review-RV.docx?web=1). The center is a part of the Department of Agricultural Economics and Agribusiness at the University of Arkansas.

The [USDA forecasts a slight increase in poultry production nationally in 2022](https://www.ers.usda.gov/webdocs/outlooks/102400/ldp-m-328.pdf?v=5206.2#:~:text=Poultry%2FEggs%3A%20Total%20broiler%20production,quarter%20on%20strong%20August%20shipments.) with broilers expected to increase by about 1 percent and turkeys by about 1.6 percent. The state produces about 31 million turkeys annually, ranking it No. 2 in the nation for gobbler growth, according to The Poultry Federation. The Natural State is no spring chicken when it comes to eggs either. Arkansas is ranked No. 4 in the nation in egg production value, producing about 3.8 billion eggs annually.

## Focus on sustainability

Researchers with the Arkansas Agricultural Experiment Station, the research arm of the Division of Agriculture, have focused on sustainability in recent years, especially water conservation.

“Water has been at the forefront of our thoughts on sustainability,” said David Caldwell, head of the poultry science department and the Center of Excellence for Poultry Science within the University of Arkansas System Division of Agriculture. “We are all well aware of how precious a commodity water is, and it takes water to grow and process chickens, turkeys, and eggs. We have a huge focus on water quantity and water efficiency.”

For example, researchers at the Arkansas Agricultural Experiment Station continued decades of research in 2021 as part of a nearly $10 million U.S. Department of Agriculture National Institute of Food and Agriculture grant awarded to Walter Bottje, experiment station poultry science physiologist, in 2019 titled, [“Empowering U.S. Broiler Production for Transformation and Sustainability.”](https://www.uaex.uada.edu/media-resources/news/2019/september2019/09-26-2019-Ark-Poultry-Grant.aspx)

Work in 2021 focused on fine-tuning a method of direct-cooling chickens with low-pressure sprinklers in tandem with traditional cool-cell pad systems and ventilation fans. Previous studies at the Applied Broiler Research Unit at the Savoy Research Complex in Northwest Arkansas showed sprinkler cooling systems used on average 67 percent less cooling water than the cool-cell pad systems.

Yi Liang, associate professor of biological and agricultural engineering and faculty with the Center of Excellence for Poultry Science, pointed out that the studies have also shown that chicken sprinklers resulted in slightly better feed conversion ratios without affecting poultry litter quality.

Sara Orlowski, assistant professor of poultry science, has also been working through a USDA grant to identify and select broilers for water efficiency, Caldwell said.

Attention to the poultry industry as the source of excess nutrient runoff in watersheds has led to a variety of mitigation tactics, including the shipment of poultry litter to out-of-state buyers. But one of the studies at the Arkansas Agricultural Experiment Station is leading the effort in the development of [a liquid-state poultry litter digester](https://aaes.uada.edu/research-highlights/poultry-litter-digestion-system/) that turns chicken litter into both biogas and a dry, stable fertilizer called struvite. Most of the water used in the anaerobic digestion process is recycled to the first phase of the machine.

Two other universities — the University of Idaho and Virginia Tech University — are working with the experiment station on the three-piece system that is funded by USDA/NIFA/AFRI Foundational and Applied Science Program. Poultry production in Arkansas generates about 1.3 million metric tons of litter a year, most of it being concentrated in the northwest region of the state, according to the [Center for Agricultural and Rural Sustainability (CARS).](https://cars.uada.edu/cars-projects/waste-management/)

“Our part is to treat poultry litter using anaerobic digestion, which produces an effluent containing increased magnesium ions that can be used for struvite production in the next step,” explains Jun Zhu, director of the CARS, and professor of biological and agricultural engineering for the Division of Agriculture.

By the end of 2022, the two other pieces of the system are expected to be delivered to the experiment station to complete the system for further testing. The team from Idaho is making the device that creates struvite. The Virginia Tech team is developing the water recovery system. Zhu expects an upscaled system to be used at an experiment station broiler house for further tests. To his knowledge, this is the only system under development that creates biogas and struvite from liquid-state poultry litter digestion in the nation.

Caldwell said the Division of Agriculture is also taking a role of leadership in the promotion and advancement of solar energy as a renewable energy source.

“Arkansas has very favorable regulations for solar in terms of how it integrates with the electrical grid,” Caldwell said. “It’s a good thing for producers to be considering right now.”

The Division of Agriculture also supports the poultry industry’s efforts to further establish animal well-being practices.

“Companies are very mindful of how poultry is being grown, transported, and processed, and while there may be variations company by company, animal welfare and well-being, just like sustainability, is ultra-important to the industry now,” Caldwell said. “All integrators we work with currently are operating under stringent animal welfare and sustainability goals or guidelines.”

A new director for the Center for Food Animal Well-Being is expected to arrive in January to continue the Division of Agriculture’s animal well-being program.

To learn more about Division of Agriculture research, visit the Arkansas Agricultural Experiment Station website: [https://aaes.uada.edu/](https://nam11.safelinks.protection.outlook.com/?url=https%3A%2F%2Faaes.uada.edu%2F&data=04%7C01%7Cfmiller%40uark.edu%7C5cd2aea2b12c4dfceb9c08d942da0e9d%7C79c742c4e61c4fa5be89a3cb566a80d1%7C0%7C0%7C637614326581623988%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=aepGh27NgEgSYv9mb8nggzA%2BaUdOhXMw7e6sspVov8c%3D&reserved=0). Follow us on Twitter at [@ArkAgResearch](https://nam11.safelinks.protection.outlook.com/?url=https%3A%2F%2Ftwitter.com%2FArkAgResearch&data=04%7C01%7Cfmiller%40uark.edu%7C5cd2aea2b12c4dfceb9c08d942da0e9d%7C79c742c4e61c4fa5be89a3cb566a80d1%7C0%7C0%7C637614326581633943%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=nH1djoLMIYNT7ERwtQMektp5RVjEjY1B93nJK%2BhyjJE%3D&reserved=0) and Instagram at [@ArkAgResearch](https://www.instagram.com/arkagresearch/).

To learn about extension programs in Arkansas, contact your local Cooperative Extension Service agent or visit [www.uaex.uada.edu](http://www.uaex.uada.edu). Follow us on Twitter and Instagram at @AR\_Extension.

To learn more about the Division of Agriculture, visit [https://uada.edu/](https://nam11.safelinks.protection.outlook.com/?url=https%3A%2F%2Fuada.edu%2F&data=04%7C01%7Cfmiller%40uark.edu%7C5cd2aea2b12c4dfceb9c08d942da0e9d%7C79c742c4e61c4fa5be89a3cb566a80d1%7C0%7C0%7C637614326581643904%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=lr4GHZJgQ86vLO0EsE4xJeCHKonXXEKL57%2FFRm%2FFqQo%3D&reserved=0). Follow us on Twitter at [@AgInArk](https://nam11.safelinks.protection.outlook.com/?url=https%3A%2F%2Ftwitter.com%2FAgInArk&data=04%7C01%7Cfmiller%40uark.edu%7C5cd2aea2b12c4dfceb9c08d942da0e9d%7C79c742c4e61c4fa5be89a3cb566a80d1%7C0%7C0%7C637614326581643904%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=yYaPKsjcVzq2f3fyBIujdLPjQo09Nr8coSuwCmRqNTE%3D&reserved=0).

## About the Division of Agriculture

The University of Arkansas System Division of Agriculture’s mission is to strengthen agriculture, communities, and families by connecting trusted research to the adoption of best practices. Through the Agricultural Experiment Station and the Cooperative Extension Service, the Division of Agriculture conducts research and extension work within the nation’s historic land grant education system.

The Division of Agriculture is one of 20 entities within the University of Arkansas System. It has offices in all 75 counties in Arkansas and faculty on five system campuses.

The University of Arkansas System Division of Agriculture offers all its Extension and Research programs and services without regard to race, color, sex, gender identity, sexual orientation, national origin, religion, age, disability, marital or veteran status, genetic information, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer.

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