

Heritage turkey production research profitable but more difficult

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Arianna Ferguson, a Penn State Millennium Scholar majoring in Veterinary and Biomedical Sciences, conducted research to determine whether heritage turkeys would eat natural foodstuffs and their impact on growth performance and carcass yield. Credit: Penn State

To meet increasing consumer demand for heritage-breed turkeys to be the centerpiece of holiday and other meals, researchers in Penn State's College of Agricultural Sciences are studying methods producers can use to raise the historical birds.

Having more in common with [wild turkeys](#) that roam fields and forests than birds currently sold in grocery stores, heritage turkeys—in the relatively few retail outlets where they can be found—sell for about four times the cost of the broad-breasted white turkeys commonly found in store freezers. The average store-bought turkey costs about \$1 per pound, while heritage turkeys run between \$4 and \$6 per pound.

These birds proportionally have much smaller breasts, darker leg meat and are generally gamier in flavor than broad-breasted whites raised on large, modern poultry farms. Heritage birds are also typically older than faster-growing, broad-breasted birds at the age of processing—26 to 28 weeks compared to 14 to 18 weeks—which can result in a more textured or flavorful meat.

Heritage does not mean organic, all-natural or free-range, though a true heritage bird may be all of those things, noted Paul Patterson, professor of poultry science, whose research group is studying alternative production methods. "Heritage," he explained, refers to specific breeds of turkeys raised in the United States prior to the 1950s, when the poultry industry began the cross breeding that resulted in the broad-breasted white turkeys most people eat today.

The heritage breeds include the Standard Bronze, Bourbon Red, Narragansett, Jersey Buff, Slate, Black Spanish, White Holland, Royal Palm, White Midget, and Beltsville Small White.

Heritage birds differ from broad-breasted whites in a number of ways: They are lighter in weight, leaner, with less muscling, and dark or

colored feathers. Broad-breasted turkeys have been bred to grow so big that they have trouble reproducing on their own and therefore, they must be artificially inseminated.

"Heritage birds, which are more athletic, can perch, fly and reproduce naturally, but are more expensive to raise," Patterson said. "However, because the market for them is growing and consumers are willing to pay so much more for them, there is considerable interest in producing more. As we have looked into this market, I am shocked at the prices people are getting for these heritage birds."

But the more naturally raised heritage turkeys desired by consumers are not produced the way broad-breasted whites are in commercial poultry operations, and Patterson's research group is experimenting with novel production methods to raise the birds. Findings from the first phase of the project, incorporating natural feedstuffs into heritage turkeys' diet, will be presented at the International Poultry Science Forum in Atlanta today (Jan. 29) by Arianna Ferguson, a sophomore majoring in Veterinary and Biomedical Sciences.

Her research focused on the performance of the "Artisan Gold," a French bird with Black Spanish heritage in a trial with 12 pens of turkeys, each holding six birds. Six pens were given commercial feed. The other six pens were fed commercial feed plus 15 percent natural feedstuffs. The feed mix was designed to encourage the birds to consume the natural feedstuffs, such as insects, mushrooms, forages, berries and nuts.

To determine their feed conversion, the heirloom birds were weighed weekly and their feed intake measured. Early in the study the birds consuming natural foods seemed to be eating a little more than the control group and weighed slightly more. However, by the time the turkeys were processed at the Penn State Poultry Education and

Research Center in December, the birds that consumed natural feedstuffs weighed essentially the same as turkeys in the control group that ate only commercial poultry feed. Hens weighed 11.84 pounds at 16 weeks and toms weighed 19.13 pounds at 18 weeks.

The research yielded some interesting information, said Ferguson, a Penn State Millennium Scholar who is required to conduct research as part of her undergraduate scholarship.

"The birds really liked the fly larvae, blueberries, hickory nuts and Chinese chestnuts," said Ferguson. "It was obvious they preferred some of the natural foods we gave them and others not so much, to the point they barely ate some. Juneberries, for example, they didn't like—the turkeys tended to play with the hazelnuts instead of eating them," she added. "Our data suggests that the growth of heritage turkeys can depend on the palatability of the natural feedstuffs."

The trial evaluating natural feedstuffs for their impact on growth performance and carcass yield is just the first phase in evaluating production methods for heritage turkeys, according to Patterson, who pointed out that few studies evaluating the feed intake and performance of heritage-breed turkeys have been done.

The next phase of the Penn State research will involve raising heritage birds in a silvopasture system where they will be able to forage and eat natural feedstuffs as they find them outdoors, instead of predominantly commercial turkey feed in a pen trial.

Perhaps the oldest agroforestry system used in the temperate regions of the world, silvopastoral systems are characterized by integrating trees with forage and livestock production. The approach might be ideal for raising [heritage](#) turkeys in Pennsylvania and the Northeast where smaller agricultural operations abound.

Patterson will work with a cooperator who will provide the land to set up the next phase of the study, and they will plant forages, berry bushes and nut trees in the spring to prepare the site for future flocks of birds.

"I think there are a lot of places this approach could work," Patterson said. "It's a system designed for a high-value market and could be scaled up or down to fit a farmer's preferences."

But such a setting may prove to be daunting for the [turkeys](#), Patterson said.

"I think they will be challenged in a wild setting because the [birds](#) really preferred the commercial feed. They are going to have to be motivated to seek out and consume these other feedstuffs."

Provided by Pennsylvania State University

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