

Counting male chickens before they hatch means good news for ethical farming

April 4 2023, by Pieter Devuyst



EU-backed projects seek to avoid the annual culling of millions of male chicks.
Credit: CC0 via Unsplash

By identifying the gender of chicks in their eggs, technologies could help prevent the killing of millions of the birds every year.

Wil Stutterheim is on a mission: to stop the global poultry industry's slaughter of billions of day-old chicks every year.

Male chicks are deemed largely useless for poultry farmers because they lay no eggs and produce less meat than females. As a result, in the EU alone an estimated [330 million](#) male chicks are killed every year almost immediately after they are born.

Driven duo

In addition to protests from animal-rights groups, several Member States have called for an EU-wide ban on this practice, which is already prohibited in Germany and France. For Stutterheim, a Dutch entrepreneur, saving male chicks has been a goal since 2011.

He and Wouter Bruins, a fellow biomedical student at Leiden University in the Netherlands, were looking to solve thorny problems as a test of their budding entrepreneurship. It was when Bruins was talking to poultry farmers that the penny dropped.

"One of those farmers told him that, for every hen in his barn, a male chick had been killed," said Stutterheim.

This realization prompted the pair in 2013 to set up a company—[In Ovo](#)—dedicated to finding more humane approaches for the poultry sector. A breakthrough came in 2016, when the two were able to identify a single biomarker that allows for the fast, high-volume identification of the sex of an egg.

With the help of EU funding for their [InOvotive](#) project that started in 2020 and ended last year, Stutterheim and Bruins developed and scaled up a system that prevents the annual culling of millions of male chicks.

Sex check

The high-tech solution on offer from Leiden-based In Ovo is called "Ella," the name of the daughter of the lead engineer and the Spanish word for "her."

Trays with hundreds of eggs pass through a machine that identifies the gender of the unborn chicks—in less than a second.

"We make a tiny hole in the eggs with a small needle, we take a little bit of fluid out of it and then we analyze this with a very fast screening method," said Stutterheim.

Each sample is checked for a natural biomarker, which shows the gender of the embryo. Then the eggs receive a stamp and are sorted. There is no need for genetic modification.

If it is female, the egg stays in the hatchery to be kept warm until the chick is born. If it is male, the egg is not incubated, saving unnecessary costs, and can be repurposed to be used in pet food, animal feed, pharmaceuticals or cosmetics.

Preventing male chicks from being born also saves the cost of raising male chickens for meat. Males grow much more slowly than females, requiring extra time and feed.

The system has been used by a Dutch commercial hatchery since 2020 and will soon be up and running in Belgium too. Plans are to expand to other parts of the world.

Interest has been expressed by poultry farmers ranging from Switzerland and Germany to countries in the Americas and New Zealand.



In Ovo's Ella machine. Credit: © In Ovo B.V., 2022

"It is In Ovo's goal to be able to provide a solution for as many markets as possible, as we want to end the practice of male culling completely in the poultry industry," said Stutterheim.

He believes the move in this direction is unavoidable, saying consumers want to eat eggs without a sense of guilt.

"This is a big ethical and animal-welfare issue and that's why we like working on it," Stutterheim said.

Childhood inspiration

He isn't alone in being moved to action by the fate of male chicks. Inspired by memories of helping out on his grandparents' chicken farm, lawyer Yehuda Elram has also helped to develop a way to stop the practice of [chick](#) killing.

When a Tel Aviv University neuroscience professor named Dani Offen told Elram about the potential of a new gene-editing technology called CRISPR, he jumped at the opportunity. Offen described it as a "revolution."

The result was [eggXYt](#), an Israeli startup developing a scanner able rapidly to detect the gender of chicken embryos inside eggs using a non-invasive optical scanner.

The EU gave its support in October 2019 by funding a [30-month project](#) named after the company to advance the technology.

"It's a perfect, simple and genius solution," said Elram, the co-founder and chief executive officer of eggXYt.

Offen wanted to find a way to see through the eggshell to determine whether the embryo was male or female without causing any damage to the egg.

CRISPR makes it possible to do this by precisely editing the genes of the mother chickens and adding a piece of DNA that gives a fluorescent biomarker to their male embryos. This makes the male eggs glow under the scanner, allowing them to be easily separated from the female eggs.

By scanning the egg through the shell, eggXYt is not only preventing the unnecessary incubation and rapid death of male chicks, it is also saving

the poultry industry billions in incubation and manual-sexing costs. As with InOvotiv, non-incubated male [eggs](#) are repurposed so there is no waste.

The technology is on track for commercial launch in strategic markets in Europe and Asia.

Bird flu next?

EggXYt believes CRISPR could address another poultry-industry predicament and prevent the slaughter of more than just male chicks by focusing on avian influenza.

Because it is based on gene editing, CRISPR offers the prospect of altering the DNA of chickens to prevent them from catching bird flu. Basically, the idea is to delete a section of chicken DNA to prevent the virus from taking hold in the cells.

Avian flu can be spread from wild birds to domestic poultry, generally kills the chickens and turkeys it infects and leaves infected waterfowl that survive as spreaders of the virus. The respiratory disease causes billions in losses for the [poultry industry](#) as well as distress for farmers who have to kill their flocks.

All of which has EggXYt also seeking a way to make chickens immune to bird flu.

"This is a big deal," said Elram. "CRISPR could also be a tool to solve this other unsolvable problem."

More information:

- [InOvotive](#)

- [EGGxyT](#)

Provided by Horizon: The EU Research & Innovation Magazine

Citation: Counting male chickens before they hatch means good news for ethical farming (2023, April 4) retrieved 26 April 2024 from <https://phys.org/news/2023-04-male-chickens-hatch-good-news.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.