



Novel technologies allowing farmers to collect and use key data about their animals and their housing will transform the poultry industry in the near future. | monsitj, Bigstock

*By Austin Alonzo
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9 disruptive technologies coming to the poultry industry

Technology will change the way the way the international poultry industry does business. The only question is how soon it will happen.

Disruption of long established business models is the definitive trend in the recent history of the global economy. The poultry industry, along with the rest of international agriculture, may be the next field to be shaken by disruptive technologies and entrepreneurs.

On January 31, as part of the 2018 International Production & Processing Expo in Atlanta, Aidan Connolly, chief innovation officer and vice president of corporate accounts for Alltech, analyzed nine technological forces that will likely shake the poultry industry in the near future. Connolly cautioned the industry leaders present to not ignore technological innovations, lest they find

themselves on the outside looking in.

The poultry industry's biggest deficiency, he said, is the lack of data collection and data use. If farmers and processors had greater access to information, like feed consumption or individual bird weight, it could be incredibly useful in improving production efficiency. This will become critically important as farmers are challenged to feed a booming global population.

9 technological forces that could shape the future of the industry

1. **3-D printing:** Three dimensional printing is already dropping in price and increasing in accessibility and will likely soon see applications on the farm and inside the household. On the farm, 3-D printing could help extend the lives of valuable breeding stock by printing replacement appendages – like feet – and help minimize production losses and save valuable animals. In the home, 3-D printers capable of making simple foods are already available at increasingly affordable prices. Connolly asked if soluble proteins could one day be available to print protein-rich foods at home.
2. **Robots:** Robotics will find increasing application both on the farm and in processing. Already, a French company, Octopus Robots, is producing and selling robots designed to work in the poultry house. Robots bring the benefit of reduced biosecurity risk – they don't leave the farm so they can't carry diseases into the house from elsewhere – higher resistance to environmental and health risks inside poultry houses and the ability to do jobs humans don't want to do or can't do. In processing, robotics are seeing increased application in replacing human labor as machine vision and machine learning technology becomes more sophisticated. Soon, robotics could even be used in the supply chain, to stock, sell and deliver food to consumers.
3. **Drones:** In the poultry industry, drones could see use in monitoring and collecting data in ways that humans cannot. The highest potential may be in organic and free-range poultry farming, as they can both watch the flock, scare away predators and herd birds back into the house when needed.
4. **Sensors:** Sensors bring a wide range of possible uses and the ability to collect data in ways not previously possible. Conolloy said sensors may be the first disruptive technology to see widespread use in the poultry industry. Possible applications include monitoring body temperature and bird stress levels. Observing these metrics could lead to better productivity and higher animal welfare.
5. **Artificial intelligence (AI):** Rapid developments in artificial intelligence are already making headlines around the world and attracting investments from leading businesses. In the poultry industry, the technology could see application in the form of machine vision used to observe houses or improve mechanical meat processing. AI algorithms are becoming sophisticated enough, Connolly said, that machine vision is capable of accurately tracking the individual bodyweights of as many as 50,000 birds raised in the same house.
6. **Augmented reality (AR):** The human eye can only see so much, and augmented reality offers farmers the chance to see the full light spectrum the bird sees in the house. Additionally, the technology can help farmers visualize data collected by sensors in real time as they are going about their day-to-day business on the farm. More consumer facing AR applications, allowing for increased transparency and a more interactive experience with the product on store shelves, are already arriving on the market.
7. **Virtual reality (VR):** VR is already being used to show on-farm conditions to consumers who are increasingly disconnected from farming. In the United Kingdom, McDonalds Corp. is deploying VR headsets allowing their customers to see what exactly the farms supplying their food look like.
8. **Blockchain:** Connolly called blockchain potentially the most transformative technology for agriculture. The distributed ledger technology called blockchain enables greater transparency in the food supply and could potentially solve one of agriculture's biggest problems. It shows people – both working in the supply chain and in the grocery store – where the bird came from, how it was fed and raised and how it was processed. For accounting purposes, all transactions create a virtual invoice creating a virtual ledger that all parties can see in real time. Walmart is already using blockchain technology in China and is bringing it back to the U.S. He predicted it will be a massive part of the food industry's future and the changes it drives will come quickly.

9. **The Internet of Things:** At the foundation of all of these developments lies the so-called Internet of Things (IOT). The IOT is the growing web of connectivity created by the proliferation of internet-connectivity in every day devices and objects. By attaching sensors and other means of collecting and sharing data, the IOT represents a rich potential for data collection and data analysis. Conolloy said IOT technology allows farmers to have as much information as possible.

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