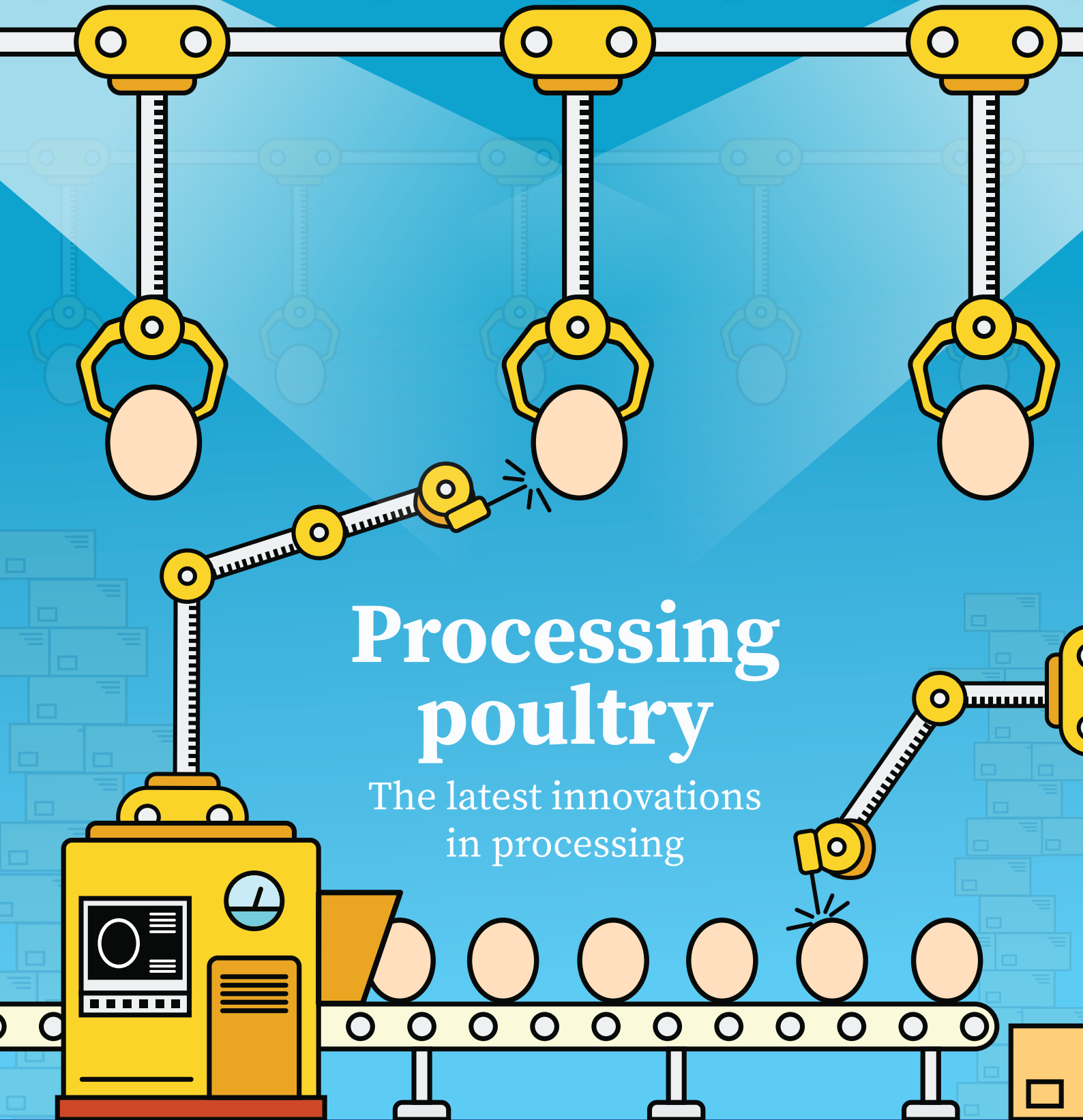


# Poultry Digital



## Processing poultry

The latest innovations in processing

**Inside the Processing issue** | Foreign intelligence: can imaging tech make production-line pollution a thing of the past? • How to depopulate end-of-lay hens responsibly • New guidelines for British Goose Producers: this year's farm walk • Finding the value in processing spent laying hens • Easing the pains of egg and chick processing



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**BIRDS VACCINATED**  
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**PREVENTION WORKS**  
Shaping the future of poultry health



# FROM THE EDITOR

## “The methods and tech in processing”

This edition of *Poultry Digital Magazine* looks at processing in the poultry industry. From advanced imaging technology on the production line (page 10) to some of the newest innovations in processing (page 22), this issue focuses on the methods and technology that make commercial poultry possible. Join us for an update from this year’s annual farm walk with the British Goose Producers at Peach Croft Farm in Oxfordshire (page 16) and get to know what opportunities (page 18) and challenges (page 14) face the processing of end-of-lay hens; are they good for more than just pet food? We believe they are.

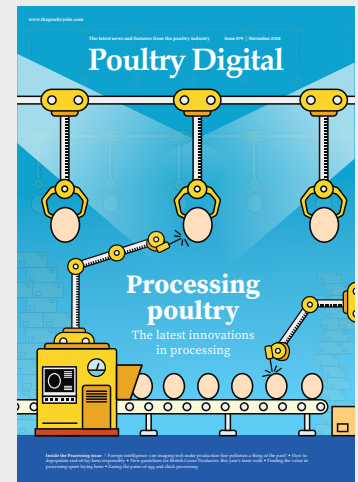
Join us again in January for our special IPPE 2019 edition where we’ll give you an inside look at our top picks from the biggest poultry event of the year, an update on the US poultry industry and a survey of the carbon footprint of poultry production in Canada.

Thanks always for reading,

Ryan Johnson | Editor



Poultry Digital Magazine  
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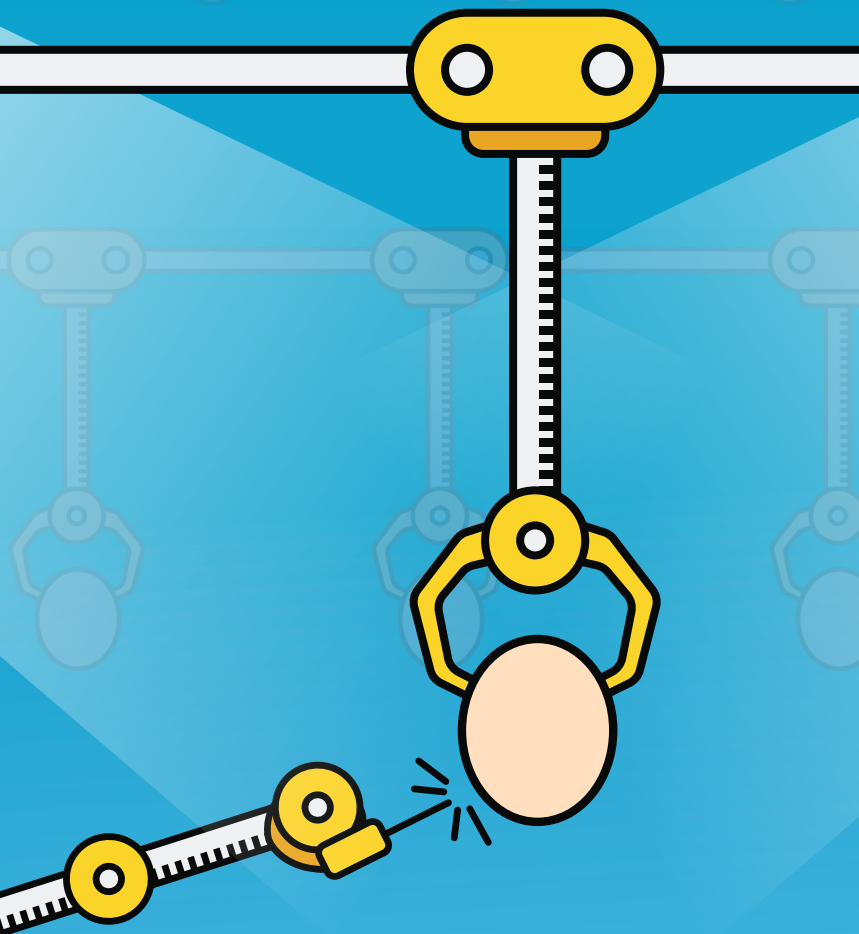
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### Looking ahead

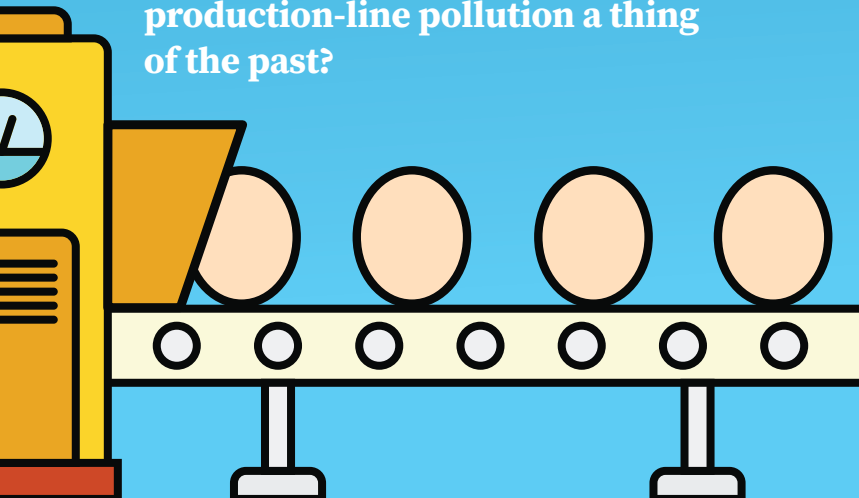
Inside the IPPE Global Markets issue, January 2019 | Inside IPPE: our top picks from the year’s biggest poultry event • Highlights from the US poultry industry: looking ahead to 2019 • What’s the carbon footprint of poultry production in Canada? • Checking in on the listeriosis outbreak in South Africa • Is there a market for spent hens in Zimbabwe? • Interview with a business analyst



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Can imaging tech make production-line pollution a thing of the past?



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Mike Colley responds to reader queries on what to do with a self-mutilating rooster and keeping a mixed species flock.

## Cracking performance for British Egg Week

UK 03 SEPTEMBER 2018

This year British Egg Week took place between 8-14 October and British Lion eggs created a toolkit to help retailers, wholesalers, food manufacturers and caterers make the most of the week



The toolkit showed some of the activity that took place during the week, which was themed ‘Don’t get hangry, get cracking’, including a new emoji and animated gifs. With research showing being hangry (anger due to hunger) affects 79 percent of Brits, protein-packed eggs can help provide a solution by helping people to feel fuller for longer.

The hangry emoji has been submitted to Google, Android and iOS and, along with the animated gifs, will be available to [download here](#) and the Egg Recipes app.

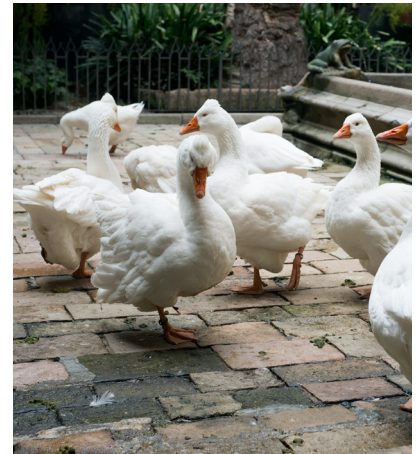
The toolkit also included ideas for how to get involved, including key messages and hangry-busting egg recipes that can be shared with customers to encourage them to celebrate British Egg Week and purchase more eggs. It also included information on how to exploit British Egg Week via social

media channels. News stories, social media activity and influencers sharing their hangry content also formed part of the campaign.

Andrew Joret, British Egg Industry Council Chairman, explained: “British Egg Week is the perfect excuse to celebrate and sell more eggs by encouraging customers to get cracking to avoid being hangry. Whether you’re a retailer, wholesaler, food manufacturer, caterer or all round egg fan, the toolkit makes it easier for you to get involved, engage with customers in a fun way, and make the most of the opportunity. And what’s more, now the Food Standards Agency has confirmed that eggs can be consumed runny, or even raw, by vulnerable groups as long as they are Lion; everyone is free to celebrate British Egg Week in style for the first time in 30 years.”

## European Citizens Initiative: Commission registers ‘End the Cage Age’ initiative

EU 05 SEPTEMBER 2018



The College of Commissioners decided to register a European Citizens’ Initiative entitled ‘End the Cage Age’.

The stated objectives of the **proposed Citizens’ Initiative** are to end “inhumane treatment of farm animals” kept in cages. The organisers asked the Commission to propose legislation to prohibit the use of: cages for laying hens, rabbits, pullets, broiler breeders, layer breeders, quail, ducks and geese; farrowing crates for sows; sow stalls and individual calf pens, where not already prohibited.

The Commission’s decision to register the Initiative concerns only the legal admissibility of the proposal. The Commission has not analysed the substance at this stage.

The registration of this Initiative took place on 11 September 2018, starting a one-year process of collecting signatures of support by its organisers. Should the initiative receive one million statements of support within one year, from at least seven different Member States, the Commission will have to react within three months. The Commission can decide either to follow the request or not, and in both instances would be required to explain its reasoning.

[Click here](#) to read the full story.

# Could Brexit's effect on British poultry divide the rich and poor?

UK 06 SEPTEMBER 2018

**A no deal Brexit risks creating a dangerous two tier food system that divides the rich and the poor, with the less well-off forced to accept lower standards, warned a major new report from a leading UK think-tank**

The think tank, ResPublica, hopes its report will act as a wakeup call to the Government, which it said has done little to prepare, or protect Britain's £7.2 billion poultry industry.

In the report *Coming Home to Roost: The British Poultry Industry After Brexit*, ResPublica set out three scenarios: "Evolution" (retaining the status quo), "Trade Liberalisation" (which would see tariffs removed) and "Fortress UK", where WTO trade tariffs would be imposed on products from the EU.

The report, sponsored by the British Poultry Council, identifies the main economic, societal and environmental risks to the poultry meat industry in the event of three potential Brexit scenarios. The report aims to keep the Government as well informed as possible, so they can mitigate future risks by negotiating a trade relationship with the EU that provides the best protec-

tion for producers and consumers.

At present, the UK is the fourth-largest poultry meat producer in the EU, and it is about 60 percent self-sufficient. The carcass balance, or import-export balance, with the EU is an important issue for the poultry meat industry with regard to Brexit. UK consumers prefer to eat breast meat, rather than dark cuts like wings, legs and thighs, which means that UK producers have to export surplus dark meat to maximise revenue. The profitability of the sector therefore revolves around finding a market for 75 percent of the bird that is left over after removing the breasts. Approximately 70 per cent of our dark meat exports are to the EU, and the majority of the poultry meat that is imported into the UK comes from the European Union. Maintaining the future relationship is therefore key to the sector.

[Click here](#) to read the full story.

## Post-Brexit Agriculture Bill to promote environmental action

USA 12 SEPTEMBER 2018

Michael Gove set out major post-Brexit policy to invest in the environment and "take back control" for farmers after almost 50 years under EU rule.

- New system of "public money for public goods" will support a Green Brexit and deliver better environmental outcomes
- Seven year agricultural transition period gives farmers time to adjust as they plan for the future
- Legislation to deliver a cleaner and healthier environment after nearly half a century under EU rules was introduced into Parliament on 12 September 2018

The Agriculture Bill sets out how farmers and land managers will in future be paid for "public goods", such as better air and water quality, improved soil health, higher animal welfare standards, public access to the countryside and measures to reduce flooding.

This will replace the current subsidy system of Direct Payments, which is ineffective and pays farmers based on the total amount of land farmed.

[Click here](#) to read the full story.

## The future of cell-cultured poultry meat: joint meeting between USDA and FDA

USA 11 SEPTEMBER 2018

US Secretary of Agriculture Sonny Perdue, DVM and US Food and Drug Administration Commissioner Scott Gottlieb, MD announced a joint public meeting held on 23-24 October 2018 to discuss the use of cell culture technology to develop products derived from livestock and poultry

The joint public meeting, hosted by the USDA's Food Safety and Inspection Service and the FDA, focused on the potential hazards, oversight considerations, and labelling of cell cultured food products derived from livestock and poultry.

"This is an important opportunity to hear from the agricultural industry and consumers as we consider the regulatory framework for these new products," said Secretary Perdue. "American farmers and ranchers feed the world, but as technology advances, we must consider how to inspect and regulate to ensure food safety, regardless of the production method.

"The FDA knows just how vital it is to ensure the safety of our nation's food supply and the critical role of science-based, modern regulatory frameworks in fostering innovation. Recent advances in animal cell cultured food products present many important and timely technical and regulatory considerations for the FDA and our partners at USDA," said Commissioner Gottlieb. "We look forward to the opportunity to hold a meeting with our USDA colleagues as part of an open public dialogue regarding these products."

The first day of the meeting focused primarily on the potential hazards that need to be controlled for the safe production of animal cell cultured food products and oversight considerations by regulatory agencies. The second day of the meeting focused on labelling considerations.

Representatives of industry, consumer groups and other stakeholders were invited to participate in the meeting. Attendees were encouraged to pre-register to attend the meeting.

[Click here](#) to read the full story.

# What's that buzzing? FDA approves black soldier fly larvae as poultry feed ingredient

CANADA 17 SEPTEMBER 2018

The US Food and Drug Administration (FDA) recommended an amendment of the Association of American Feed Control Officials (AAFCO) ingredient definition of dried black soldier fly larvae (BSFL) to include feeding to poultry



The approval of BSFL for use in poultry feed expands the potential for this ingredient as a more sustainable source of protein and enables a nutritious, natural feed ingredient for poultry diets.

Research conducted by [EnviroFlight](#) on broiler chickens with Dr. Kimberly Livingston, Assistant Professor in Nutrition, Immunology and Physiology at North Carolina State University, and on laying hens with Dr. Paul Patterson, Professor of Poultry Science at Penn State University, supports the value of these ingredients for inclusion in feed for poultry species. This research was performed with ingredients produced at the EnviroFlight facility that have met the highest quality standards established by the US Food Safety Modernization Act (FSMA).

“Black Soldier Fly Larvae ingredients (meal, oil and whole larvae) produced by EnviroFlight provide an exciting nutrient option for laying hens with significant amounts of

energy, protein, essential amino acids, fatty acids and minerals that support the hens' body weight, egg production and quality,” commented Dr. Patterson.

EnviroFlight is pleased to be able to support this new market opportunity with the first US based, pet food grade, FSMA compliant facility opening in the fourth quarter of 2018. EnviroFlight's facility in Maysville, Kentucky, will allow for production of dried BSFL to the capacity of up to 3,200 tonnes/year.

“We are thrilled to be the first U.S. commercial producer of BSFL, and to bring EnviroFlight products to the animal feed and pet food industries. Global need for sustainable protein continues to grow as the world population is expected to increase to over 9 billion people by 2050, and we are proud to be part of the solution to this challenge,” said Dr Liz Koutsos, President of EnviroFlight.

[Click here](#) to read the full story

# British Meat Processors Association speaks out about Defra progress

UK 13 SEPTEMBER 2018



The Catchment Sensitive Farming (CSF) partnership launched a new £3 million programme to reduce ammonia emissions from agriculture on 18 September, 2018.

Commenting on the National Audit Office Report published yesterday, Nick Allen, CEO of the British Meat Processors Association said: “Having been closely involved with Defra over the last year, we have been impressed with how quickly the department has risen to the challenge of expanding its workforce, drafting in new skills and getting on with the task of building new IT systems to cater for a no-deal scenario. However, there is still much work to be done and these preparations will most likely fall short of what is needed by March 2019.”

Mr Allen said that “A troubling detail in the NAO's report is that Defra's economists expect an increase of between 150 percent and 300 percent in the volume of Export Health Certificates that will need to be processed. This will need a commensurate increase in the number of veterinarians to handle the work.

“The disruption that we could be facing will have drastic consequences for meat companies and contingency plans need to be prioritised if this industry is to avoid being seriously damaged by the fallout from a no-deal Brexit”

[Click here](#) to read the full story.

## Egg Farmers of Canada concerned over USMCA

CANADA 03 OCTOBER 2018

Canadian egg farmers are concerned with the outcome of the North American Free Trade Agreement (NAFTA), which is now called the United States-Mexico-Canada Agreement (USMCA)

While additional time and analysis is required to fully understand the potential future impact of such a result on not just our farmers, the final agreement has granted additional access to the Canadian egg market, with further market access granted to Canada's poultry sectors and poses significant impact to the future of Canada's dairy sector.

"The outcome of the negotiations will have a negative impact on the system of supply management as a whole and specifically on the vitality of Canada's egg farming sector. It represents a hit to consumers who overwhelmingly prefer Canadian eggs, with nearly 90 percent agreeing it's important that the eggs they purchase are produced in Canada," said Roger Pelissero, Chairman of Egg Farmers of Canada.

We are always worried about the impact resulting from increased access



on the sustainability of Canadian egg, poultry and dairy industries and are especially concerned about what appears to be yet another devastating impact on our fellow dairy farmers. While we are still assessing the full impact of the USMCA agreement, the outcome means more foreign eggs on grocery store shelves.

[Click here](#) to read the full story.

## Fair funding for farmers across the UK

UK 16 OCTOBER 2018

An independent panel will look at how funding supports the needs of England, Scotland, Wales and Northern Ireland

The Government announced a review to deliver fair funding for farmers in all four parts of the UK when we leave the EU.

The Secretary of State announced today that an independent advisory panel will look at what factors should determine the distribution of agriculture funding between England, Scotland, Wales and Northern Ireland in this Parliament.

This will consider each country's individual circumstances, including environmental, agricultural and socio-economic factors. Farm numbers and farm sizes will also be taken into account to make sure all parts of the UK are treated fairly.

The review, led by Lord Bew of

Donegore, will provide recommendations for how the annual amount of convergence funding is fairly split between the four countries in the remainder of this Parliament once the UK has left the Common Agricultural Policy. It will be informed by previous allocations but will not revisit these decisions or redistribute money that has already been committed.

Lord Bew was Chair of the Committee on Standards in Public Life for five years and has contributed to a number of Bills, reviews and reports since his appointment as a non-party-political peer by the independent House of Lords Appointments Commission in February 2007. He will be joined on the panel by representatives from each devolved administration to ensure that their voices are heard.

[Click here](#) to read the full story.

## Leading food companies form the Global Coalition for Animal Welfare

GLOBAL 10 OCTOBER 2018

Companies joined forces to advance animal welfare standards throughout the global food supply chain.

Launched on 10 October 2018, the Global Coalition for Animal Welfare (GCAW) is the world's first food industry-led initiative aimed at advancing animal welfare globally. The global platform unites major companies and animal welfare experts in improving animal welfare standards at scale and in meeting consumer demand for food products from animals reared in systems that promote good welfare.

Founded by seven member companies, GCAW represents some of the largest names in global food production and food service: Aramark, Compass Group, Elior Group, IKEA Food Services, Nestlé, Sodexo and Unilever. With combined revenues of EUR 139 billion (USD 165 billion), and serving 3.7 billion customers per day, these companies have launched the Global Coalition for Animal Welfare to collectively address systemic barriers to improving animal welfare, accelerate the development of standards and drive progress on key welfare issues.

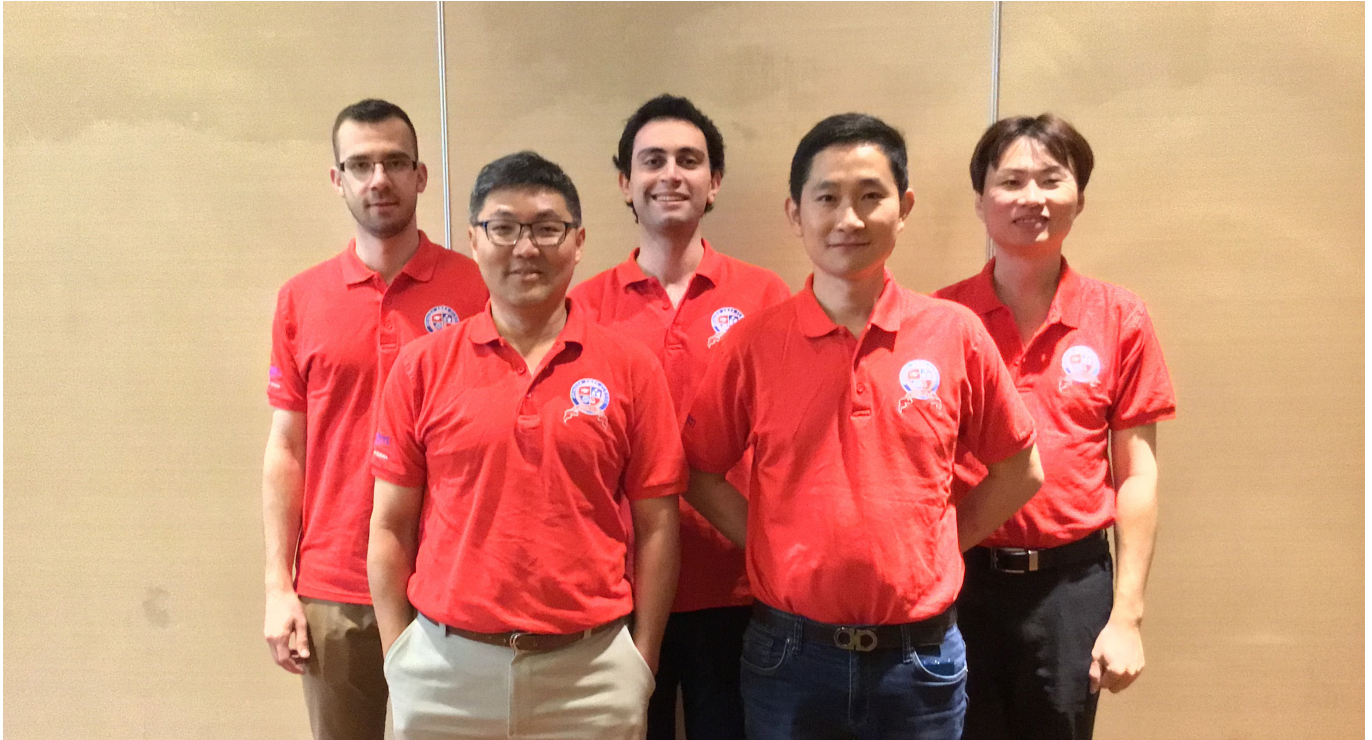
Today, more than 70 billion land animals are farmed for food annually, and, by 2050, livestock production is expected to double what it was in 2000.

GCAW will advance animal welfare through:

1. Providing a platform for food companies to work more closely with farm animal welfare experts to identify common objectives and drive improvements;
2. Prioritizing welfare issues and developing roadmaps for industry change while supporting producers in implementing strong animal welfare practices;
3. Advancing animal welfare knowledge globally through industry insights, bespoke research and partnerships for action.

[Click here](#) to read the full story.





# Discovering the key to successful live-bird processing

**Aviagen EMEA Production Management School Processing Module big hit with attendees**

The foundation of any successful integrated poultry business is a thorough knowledge of live bird processing, which represents the final link in the supply chain before the consumer, and it is the step that can make or break a producer's business.

In September, Aviagen hosted the first Europe, Middle East and Africa (EMEA) Production Management School Processing Module in Kuala Lumpur, Malaysia. The School not only offered classroom learning, but, most importantly, first-hand, practical experience at a local, working poultry processing facility. The main focus was on effective solutions to the critical issues faced in a live-bird processing plant, covering four major areas: Farm to Consumer, the Working Live-Bird Processing Plant, Economics and Workshops and Team Work.

**Farm to customers** Each link in the processing chain has an impact on the quality of the end product, and ultimately on company profit. Therefore, it's important to optimise quality and efficiency at each stage – from catching at the farm and hang-on, through first and second processing, to the final product arriving on supermarket shelves.

**Working live bird processing plant** Because the best way to learn is through hands-on experience, the training immersed students daily inside an operational processing plant close to the centre of Kuala Lumpur.

**Economics** The processing plant is the money-making part of the live-bird broiler production chain. A 0.5 percent change in breast meat yield has a massive impact on the bottom line. Therefore, a major emphasis was placed on profit and loss

within the production chain to give attendees a strong understanding of the economics of this part of the business.



**Workshops and team work** Through interactive and engaging problem-solving sessions, students were able to engage in lively discussions, sharing important knowledge, asking questions of their tutors and learning from one another.

The end goal was for students to take home with them a strong theoretical and practical understanding of how a processing plant operates and the constraints and daily challenges within a processing operation. This in-depth knowledge is critical to maximizing meat quality, yield and safety, and ultimately increasing the bottom line for integrated poultry producers.

## Broadening the scope of EMEA Schools

Since 2012 Aviagen has consistently widened the net of its EMEA Schools, with different modules covering breeder, broiler and hatchery management, nutrition and now processing.

The Processing Module presents an added dimension to the School offerings as another important component of a live bird operation and, due to the enthusiasm and positive feedback from attendees, a second Processing School is being arranged for 2019, so stay tuned for further details.

# Foreign intelligence

## Can imaging tech make production-line pollution a thing of the past?

Words Treena Hein

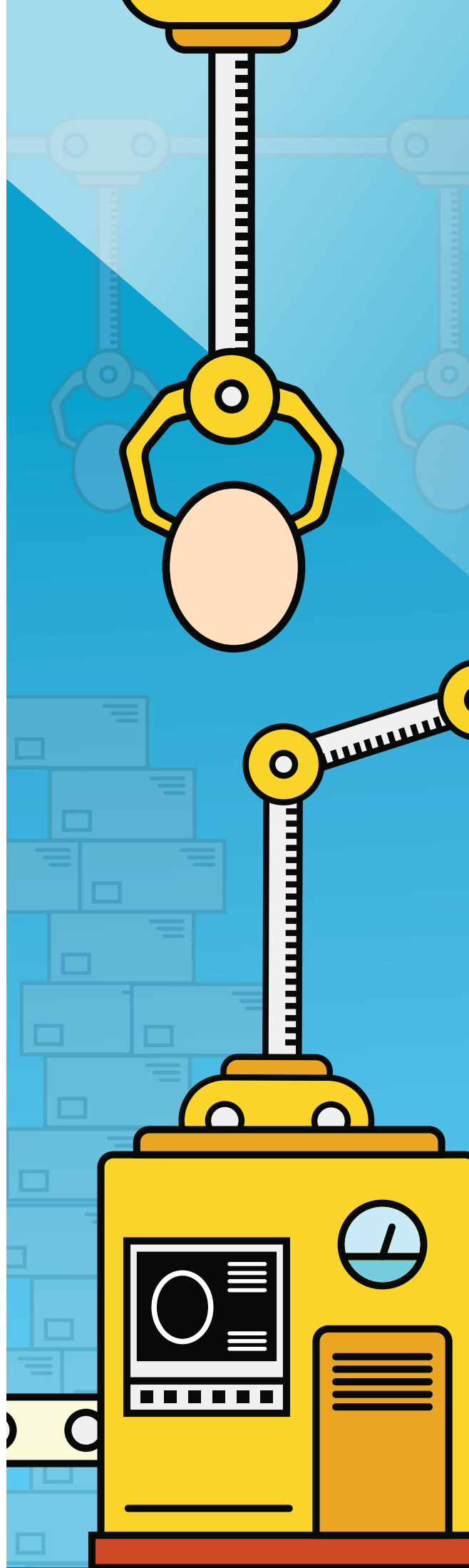
Aside from disease, foreign bodies that find their way into poultry processing is a major cause of product recalls and discards. But new, hypersensitive imaging technology might offer a solution, as the latest weapon in the war against non-pathogen contamination.

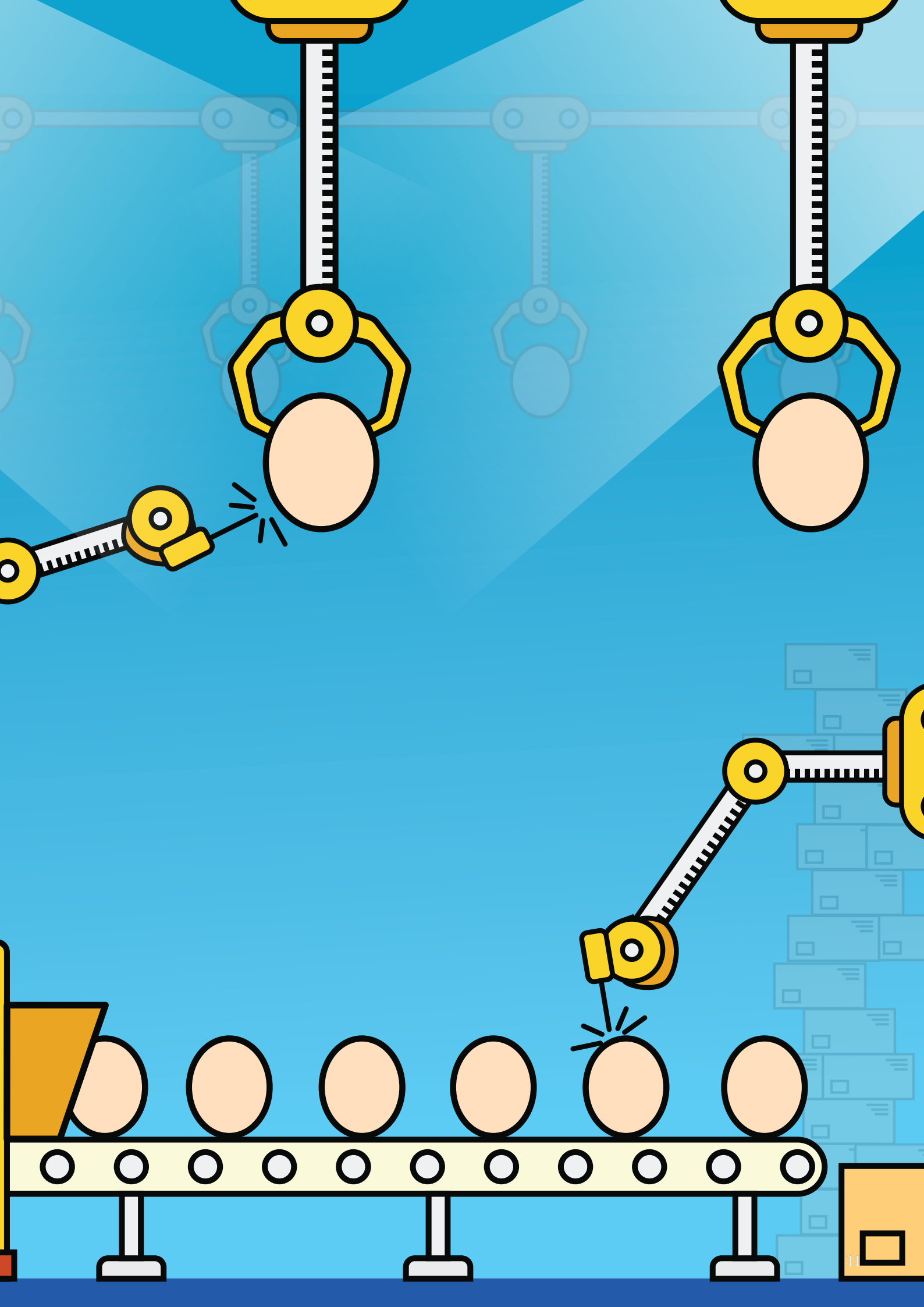
Recalls of poultry products still abound today around the world. Most of them are due to the presence of Salmonella or other pathogens, but many, including three recalls in Europe and another three in the United States so far this year, are due to the presence of foreign materials such as plastic and metal. Recalls obviously cost money and waste resources, and also negatively affect the reputation of companies and even entire sectors of food production. However, a cutting-edge scanning technology being used in many industries is helping to reduce recalls related to foreign materials. It's known as hyperspectral imaging. Sensors detect bands across the visual and non-visual electromagnetic spectrum and the unique electromagnetic "fingerprint" of any material (meat, bone, plastic, metal) can be determined, making it easy to detect any foreign objects.

The process involves large amounts of information being gathered and processed instantaneously, making it well suited to automated situations where the data can be acted on in real time. Food production lines constitute one such area in which the technology can be effectively applied, but there are many, many more.

In agriculture, hyperspectral imaging is being used to detect stones, shells and other

**"Tech is also being explored to determine crop plant health, and to tell whether there are animal proteins and contaminants in livestock feed"**





## Poultry and egg product recalls due to foreign objects

A partial list from Europe and North America over the last two years

### **EU** From the European Commission's Rapid Alert System for Food and Feed (RASFF):

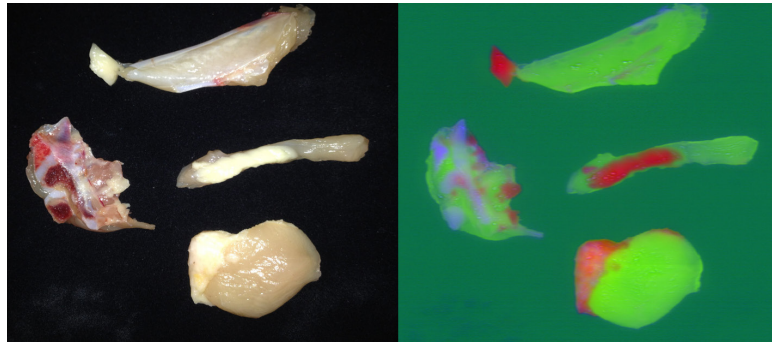
- **September 2018:** plastic fragments in frozen chicken nuggets made in Lithuania;
- **July 2018:** plastic particles in frozen chicken nuggets made in Spain;
- **June 2018:** plastic fragments in chicken sausages made in Austria.

### **USA** From the US Department of Agriculture's Food Safety and Inspection Service:

- **September 2018:** Wayne Farms recalled about 439,000lb of frozen, fully cooked chicken products that may have been contaminated with extraneous materials, specifically metal pieces;
- **June 2018:** Tyson Foods recalled over 3,000lb of frozen, breaded chicken products that may have been contaminated with extraneous materials, specifically soft plastic;
- **May 2018:** Ruiz Food Products recalled about 51,000lb of frozen breakfast burritos that may have been contaminated with extraneous material (reports of plastic pieces).

### **CANADA** From the Canadian Food Inspection Agency:

- **October 2017:** Sultan of Samosas chicken tandoori and chicken paprika samosas recalled due to pieces of metal;
- **August 2017:** Maple Lodge Farms recalls chicken frankfurters due to the potential presence of bone fragments;
- **June 2017:** Maple Leaf chicken-breast nuggets recalled due to the potential metal and plastic.



**HYPERSPECTRAL** | The imaging is capable of detecting foreign bodies present in meat

foreign material in nut packaging lines and also to identify defective potatoes. The tech is also being explored to determine crop plant health, and to tell whether there are animal proteins and contaminants in livestock feed. In human medicine, early diagnosis of retinopathy and other eye diseases is being explored. Additionally, with hyperspectral imaging, geological samples can be quickly mapped for various minerals. The tech is also being used to monitor emissions produced by power plants, waste incinerators and other types of factories, to detect temperature differences in many types of situations, to analyse currency and for remote sensing, including military surveillance.

### No place to hide

"Current mechanisms to detect and remove undesired organic material and foreign objects [in poultry and meat processing] are limited and/or ineffective," notes Heather Galt, vice president of marketing at P&P Optica, a hyperspectral imaging technology firm based in Waterloo, Ontario, Canada. The firm started trialling

its Smart Imaging System in both Canada and the USA over two years ago in a number of different applications (poultry, meat and produce). "For example, visual inspection is an inconsistent method of removing unwanted items," says Galt. "Line workers who are tasked with the manual removal of items may miss small extraneous materials and may actually contribute additional extraneous materials – for example, when scissors accidentally clip off small pieces of rubber gloves."

Similarly, scanning systems that use X-rays are also limited in their effectiveness; Galt notes that they don't detect materials such as plastic and are also not able to identify small pieces of bone or cartilage. And obviously, metal detectors are only able to identify metal fragments. In the end, even companies that deploy all of these traditional sensing systems may still miss foreign materials.

In poultry processing, hyperspectral imaging is not only being used to detect and remove dangerous foreign materials, but some meat processors are using hyperspectral imaging to make sure, for example, that bits of sau-

**"Some systems also allow food processors to assess and manage the compositional quality of their products, identifying for example, the amounts of protein, fat, bone and water"**



**EAGLE EYE** | Headwall Photonics uses hyperspectral imaging to detect wooden breast and fecal contamination

sage casing are all removed when sausage is sliced in order to sell it in snack format. Some systems also allow food processors to assess and manage the compositional quality of their products, identifying for example, the amounts of protein, fat, bone and water.

The most common sources of foreign materials found in poultry products are bone, ligament, cartilage, hard plastics, nitrile plastic (rubber-glove material), wood, stone and glass. Gerhard Stanzel, hyperspectral imaging technology specialist with Stemmer Imaging in Germany, notes that not all foreign materials can be recognised by hyperspectral imaging directly, but that since each meat has own spectral signature, that can be compared to any contaminants, and everything “non-chicken”, for example, is typically easily identified.

He says contaminants in food processing plants can come from plastic boxes, gloves, pallets, packaging material and even “lost objects”. Indeed, in June 2017 in Canada, chicken-breast nuggets made by major processing firm Maple Leaf were recalled due to the potential presence of pieces of a pen.

### Broader applications

Stanzel adds that while the use of hyperspectral imaging has already led to improved food safety and quality through the detection of foreign materials, it is also being used to detect much more.

EVK of Austria for example, employs it to detect wooden-breast syndrome in chicken meat, which costs meat companies large amounts of money every year. The firm states on its website that, tradi-

tionally, workers have to try to detect the wooden-breast defects by touch, because many observable differences between normal and wooden chicken breasts do not necessarily correlate with the actual defect being present.

Headwall Photonics in Massachusetts, USA also uses hyperspectral imaging for detecting wooden breast, as well as fecal contamination. President and CEO David Bannon says the system also “embeds algorithms for diseases such as septicemia and toxemia”. Several years ago, Headwall Photonics entered an exclusive licensing agreement with the US Department of Agriculture’s Agricultural Research Service for hyperspectral technology patents related to poultry processing, following years of collaborative research. These patents relate to disease detection at high-speed line rates to comply with food safety regulations. **PD**

# How to depopulate end-of-lay hens responsibly

## The poultry housing experts at ZTHZ in Switzerland offer advice on responsible depopulation in caged and cage-free systems

Words Melanie Epp

As egg producers around the world make the switch from caged to cage-free housing, amendments in the way they manage their flocks will be required. One of those amendments is the way in which end-of-lay hens are depopulated. If done incorrectly, depopulation can give rise to welfare issues, such as fractures, dislocations and muscle injuries. Under the supervision of Michael Toscano, poultry welfare researcher Chris Gerpe from the Center for Proper Housing, Poultry and Rabbits (ZTHZ) in Switzerland is working to find the most humane depopulation solution for cage-free growers.

After egg production has slowed down at about 60-70 weeks of age and laying hens have reached the end-of-lay period, “spent” hens must be removed from barns. Depopulation, no matter which housing system is used, involves three steps: catching, carrying and crating. Despite the fact that the steps are similar for both caged and cage-free flocks, depopulation in cage-free environments can be somewhat more challenging.

“Hens can be everywhere when housed in an aviary; they will not just all sit on perches,” says Gerpe. “Nests need to be closed, so they cannot enter

them in the evening, and grids that prevent the hens from going underneath the aviary should be installed.”

“There are always some hens that will be on the ground, so these should, if possible, be removed first,” he adds.

Whereas in aviary systems the ground is commonly covered in litter, in caged systems, the floor is usually a clean, smooth surface. “Producers like to take out most of the litter to prevent people from tripping, but not completely as a bare floor can be slippery,” explains Gerpe.

Probably the biggest difference, though, is that hens in caged systems cannot easily escape. In aviary systems, however, if depopulation is done incorrectly, hens will be scattered throughout and will need to be chased and caught individually.

“This can be prevented by simultaneously depopulating all corridors in a tight line of workers, and if possible immediately going after escaped hens,” says Gerpe.

Another issue poultry handlers face in cage-free systems is accessing the hens in the aviary’s interior. Depending on the aviary system, corridor width, or arrangement of aviary rows, it can be difficult to catch hens without causing collisions



with the pen furniture, says Gerpe.

“Caged systems, on the other hand, only have a relatively small opening to get the hens through, which can also lead to collisions with the pen furniture,” he says. “It might be necessary to provide benches or platforms to reach higher tiers if the balconies cannot support the weight of workers.”

Perhaps most concerning is how stressful depopulation is on the hens. The procedure – in both caged and aviary systems – can also lead to injuries, such as fractures, dislocations and muscle injuries.

“Preliminary results from our first study estimated that approximately 8 percent of hens sustained an injury that potentially occurred during depopulation,” explains Gerpe adding that this figure can only be estimated since injuries categorised as “fresh” can be up to two days old. “Our efforts to reduce these adverse effects,” he says, “are based on our own observations, meetings with the Swiss egg industry, producers and the



## “Approximately 8 percent of hens sustained an injury that potentially occurred during depopulation”

input gained from a professional depopulation company in the Netherlands that we visited last year.”

In a second project, Gerpe’s aim was to reduce injuries, stress and worker fatigue during depopulation. One strategy they focused on was lighting, testing depopulation results in complete darkness, with modified head torches and even pre-installed LED blue lights. They built portable blue-light modules which emit light with a wavelength of 400 nanometers. It’s a frequency hens do not see well, says Gerpe, and they equipped half of the barns with these modules. The other half was depopulated either without lights or in extremely dimmed full-spectrum lights.

In this experiment, Gerpe also evaluat-

ed handling time, explaining that longer handling times are associated with increased stress responses. By providing carts for the crates so the hens could be packed inside the barn, they were able to minimise handling time – and being removed this way meant the birds did not need to be carried and carted outside. Both methods were compared.

At present, Gerpe is still analysing data, so he can’t provide conclusive results. But he said it seems like producers’ attitudes, and especially experience with the procedure, are very influential factors to consider. “We could for example observe considerable differences in the working speed of very experienced people when they depopulated a new barn,” he says.

“Judging from our personal experience, we recommend that the producer should not engage in the actual depopulation procedures, but rather take the role of a supervisor or organiser to ensure that the process runs smoothly,” he continues.

The third experiment will elaborate further on the handling aspect, and Gerpe will investigate not only the effect of handling time in a more standardised setting, but will also compare conventional handling with an alternative handling method that is thought to cause less fatigue.

“With these results we do not aim to promote the alternative handling method as a new standard, as it would be difficult to implement in practice,” he concludes, “but rather highlight the potential to improve depopulation in terms of animal welfare through handling methodology.” **PD**

*ZTHZ is a collaborative effort between the University of Bern and Switzerland’s Federal Food Safety and Veterinary Office.*

# New guidelines for British Goose Producers

## This year's farm walk looked to the future of goose production in the UK

Words Ryan Johnson

Each year the **British Goose Producers (BGP)** gets together for their annual farm walk, which was this year hosted by Bill and Kim Homewood at Peach Croft Farm in Oxfordshire.

Their farm has produced geese and turkey for 80 years and three generations, with Bill and his wife Kim presently bearing up the mantle. From a single goose 40 years ago, Bill and his family steadily increased the number of geese in production. They now rear 2,000 geese each year, beginning in the early spring. Their geese are grown slowly to full maturity on sprawling pasture on a diet supplemented by cereals grown on their 700 acres of arable land.

In addition to the pastured geese, Bill and Kim also produce 7,500 turkeys each year on their pasture which are likewise slow grown to full maturity. They keep

both bronze and farmyard white-feather turkeys, which prefer a smaller area to the bronze turkeys which enjoy having a large range. The white-feathered turkeys could be seen enjoying the straw bails and enrichments of their yard.

Come Michaelmas until the end of December, the geese are processed on-farm and aged for around 20 days at 2°C to improve the flavour of the meat. Goose fat is also rendered for the best potatoes you could wish for during the cold season. Our editor also noticed (and took the liberty of trying out) some goose down pillows.

To process the geese, Bill explained that he recently switched to captive bolt stunning, which he's found to be more humane and effective than shock stunning. The geese are then wax plucked, which makes the plucking process more efficient in how the wax grips the feath-

**“To process the geese, Bill explained that he recently switched to captive bolt stunning, which he's found to be more humane and effective than shock stunning”**







**CLEAN PLUCK** | Wax plucking helps the plucker to grip feathers more effectively



**IN THE FIELD** | The Homewoods produce 2,000 free-range geese each year

ers allowing the rubber fingers on the plucking roller to pull them out more effectively. The wax is three parts paraffin and one part microcrystalline wax.

The Homewoods sell turkey crowns and whole geese primarily to local customers from their farm shop. Their birds also, however, make it as far as London to a speciality store there.

### **New guides for goose producers**

In the afternoon, the British Poultry Council, together with British Goose Producers, unveiled new guides for goose producers in the UK. Among these changes are the provision of a voluntary code of practise and, integrally, an avian influenza contingency plan.

Some important precautions include keeping free ranging poultry away from farm shops, removing litter from and washing contaminated sheds which can then be repopulated with non-avian livestock as a temporary solution. One further solution, according to the host of this year's farm walk, Bill Homewood, is simply to feed the geese indoors when they come in at night. He tells us that when they come in, he feeds them with a balanced ration rather than wheat.

Presenting the new guides, Máire Burnett, BPC technical director, said that the new code integrates the legislation and marketing requirements of every aspect of raising geese and is flexible enough to include future changes in legislation.

BGP Chairman John Franklin said that members supported the new changes, and are keen to see goose sales improve through greater media exposure. Mr Homewood suggested hosting radio networks on the farm and taking full advantage of social media near to the Christmas season is a great way of increasing sales. He also pointed out that heavier geese are more in demand these days, weighing in at 5kg after finishing.

It's hoped that the new guides will increase the number of members in the BGP. From our side, more geese reared humanely on farms like Peach Croft would be well received by many. **PD**

# Finding the value in processing spent laying hens

**Can spent hens end up on our plates rather than in the dog bowl? We think so.**

Words Chris Harris

The commercial value of spent laying hens has long been considered negligible. Most are euthanised and then either sent for rendering to be converted into protein meal for feed or turned into pet food. Hens that are at the end of their laying life are considered a by-product of the egg industry, unlike broilers that are reared for meat and are a valuable food product.

If spent hens do go into the human food chain, they are generally used in products such as soups, stock or stews. Other birds are simply composted or just buried after being euthanised because of their low market value.

Now, however, the commercial value of the meat for human consumption is starting to be exploited more and more. In some parts of Asia, in particular, there is no differentiation between meat producing and egg laying chickens, using the same bird for both.

While broilers that are bred specifically for meat grow more quickly and put on more weight than laying hens, the layers tend to be leaner and will be older. But the differences between laying and meat-producing birds have only come about fairly recently, as breeding research has been applied to produce high-performance hybrids, with specialist lines producing better layers and more efficient meat producers.

Up to now, it has not been considered feasible to produce a bird that lays more eggs and at the same time puts on more weight.

However, in Germany [Lohmann Tierzucht](#) has been researching a dual bird and has produced the Lohmann Dual, which the company says combines good laying performance with acceptable weight gain for meat consumption. While the birds produce smaller eggs and result in slightly higher feed costs, the better weight gain and meat quality helps to compensate for some of the disadvantages.





## “For most laying breeds, the commercial value of the meat at the end of laying has not been fully exploited”

For most laying breeds, the commercial value of the meat at the end of laying has not been fully exploited. A recent British television programme hosted by celebrity chef Jamie Oliver and celebrity farmer Jimmy Doherty, *Jamie and Jimmy’s Friday Night Feast*, put forward the proposal that meat from old laying hens should be sold in high street shops. In taste tests, diners said they preferred the flavour of the free-range laying hens and they would be prepared to pay more for the meat.

Already, the commercial value of meat from spent hens has started to be seen. In the Netherlands, an egg producer, a food developer, a sandwich processor and an international airline have joined forces to develop a sustainable supply chain for higher-welfare chicken using the meat from end-of-lay hens.

The egg producer, [Rondeel](#), teamed up with food-development company Kokreatur and sandwich producer [Qizini](#) to investigate how they could use the meat from their laying hens. Rondeel’s Vencomatic enriched barn-egg production system fitted well with Qizini’s standards for using natural and welfare-friendly products. Developers working on the new product discovered that using older birds tended to make the meat darker with a stronger flavour, so herbs were added in the cooking process to achieve the right flavour and colour. Qizini eventually developed a thinly sliced product that was acceptable under taste tests, which could be used in sandwiches on the Dutch airline KLM. Using a 2kg bird, they also found that the bird produced more end-product than normal broiler chickens.

The potential for high meat yields from spent laying hens has also attracted research into the use of the meat for the production of other processed products such as sausages and mortadella, adding worth to an otherwise low-value meat.

In Brazil, a study by Karina Márcia Ribeiro de Souza at the University of São Paulo, entitled *Adding value to the meat of spent laying hens manufacturing sausages with a healthy appeal*, showed that using the leg and breast meat from spent laying hens had “excellent potential” for the production of mortadella. The end product was healthier, containing high



## “Any stress on the birds in catching, transport, lairage and slaughter will also have a detrimental effect on the meat quality”

polyunsaturated fatty acids and with a good polyunsaturated-to-saturated fatty acid ratio. The mortadella also received good scores from consumers in both visual and taste tests.

While the sector is becoming more interested in processing spent laying hens – and as methods are being developed to add value to layers’ carcasses and to find new markets for their meat – welfare issues that are familiar in the processing of broilers are also having to be addressed.

The catching, transport and slaughter process are of particular concern, as the hens can be susceptible to bone fractures and are also affected by temperature changes in the crates during transport. The birds can also be affected by tem-

perature stress in lairage at the slaughterhouse, with end layers being more affected by cold stress rather than heat stress. Welfare experts report that this can be addressed by altering the number of birds in the crates. Any stress on the birds in catching, transport, lairage and slaughter will also have a detrimental effect on the meat quality in the final product.

With spent laying hens being older than traditional broilers, they can also show more flightiness and are susceptible to fractured bones and bruising through excessive flapping when some more traditional slaughter methods such as hanging by the legs and electric water bath stunning are used.

[Noble Foods](#) in the UK employs RSP-

CA Assured criteria in its catching and processing to ensure the highest welfare standards are maintained. The company uses a controlled-atmosphere stunning system that means the handling of the birds ends at the farm.

Martin Troop, managing director of the poultry division at Noble Foods, in charge of poultry processing, said that the company uses an Anglia Autoflow Easy-load Drawer system to catch the birds and take them to slaughter, so that they are not handled once they leave the farm.

The birds are stunned in the crates with nitrogen in the controlled atmosphere stunning system.

“It is an inert gas, so the bird does not feel it,” Mr Troop said. “It was also fortuitous because we were not affected by the CO<sub>2</sub> issues earlier this year.”

He said that compared to CO<sub>2</sub> systems that are more generally used in broiler processing systems, the birds spend less time in the stunner. “We are very happy with it as the meat doesn’t come out red and we are not seeing any of the welfare indicators in the meat,” he said.

## “The final meat product usually goes for further processing or is exported to countries where there is a call for the wings and legs such as in West Africa or South Africa”

He added that the attention to welfare means that the system Noble Foods uses does not see the wing damage that can be seen in some systems. “It is best for the bird, but it is also better for the staff,” he said.

“They don’t have to handle the live birds and there is no dust and no wing flapping.”

Mr Troop said that the final meat product usually goes for further processing or is exported to countries where there is a call for the wings and legs such as in West Africa or South Africa.

“The meat is a slow cook meat, but it is fine,” he said adding that it gives more than sending the birds from rendering.

He said it is a “sensible” industry providing “a viable product to the supply chain”.

The production system on the farm can also influence meat

quality, and a study published earlier this year in *Poultry Science*, conducted by Fort Worth University in the USA and Stellenbosch University in South Africa and headed by Semwogerere Farouk, demonstrated the advantages of free-range systems compared to caged systems in terms of meat quality.

The study, *Effects of production systems on the carcass and meat quality characteristics of spent laying hens*, showed “Production systems had an effect on carcass characteristics and physical and chemical attributes of the meat derived from spent laying hens.

“The carcass and portion weights of the spent laying hens were also lower than the minimal market weights (carcass weight: 1.5kg) of broiler chickens. This constitutes a further reason for the lower economic value of spent laying hens.”

The report adds: “The free-range production system increased the weight of the prime economic portion (breast); however, the meat percentage of the breast portion was reduced. As expected, the selected physical attributes of free-range hen meat were higher than those of caged hens, which could be attributed to increased motor activities and the uncontrolled environmental conditions experienced by the former.

“The skinless breast-meat fat content of spent laying hens in this study was lower than that of broiler chicken breasts reported in the literature. Thus, we might recommend spent laying-hen breast meat to consumers concerned about high fat content in chicken.” **PD**

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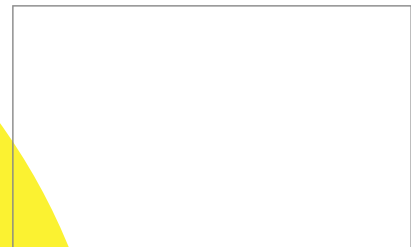
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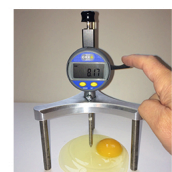
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# Easing the pains of egg and chick processing

**A suite of advanced new machines and techniques are making tasks such as packing, grading and sorting ever more efficient**

Words Chris McCullough

Modern egg and chick processing has come a long way over the past decade, aided by new ideas, new technology and new-age farmers. Long gone are the days of gathering hundreds of eggs by hand, and then having to wash and sort them out by size or shape before packing in trays ready for delivery or collection.

There are around 397.35 million laying hens in the European Union producing in the region of 7.7 million tonnes of eggs each year. That's a lot of eggs to process by hand, but thankfully technology has taken over in the majority of the 28 EU members states to assist with the handling of eggs. While some countries have taken steps to invest in the latest equipment, both on farm and in factory, some of the poorer states in the EU still use traditional labour-intensive methods.

Four areas of production that have particularly benefited from new technology in recent years are in packing, grading and separating eggs, all of which have seen advances in equipment to make processing efficient. Sexing chicks with the use of innovative laser techniques has also shown promise.

## Big Dutchman's BigPacker system

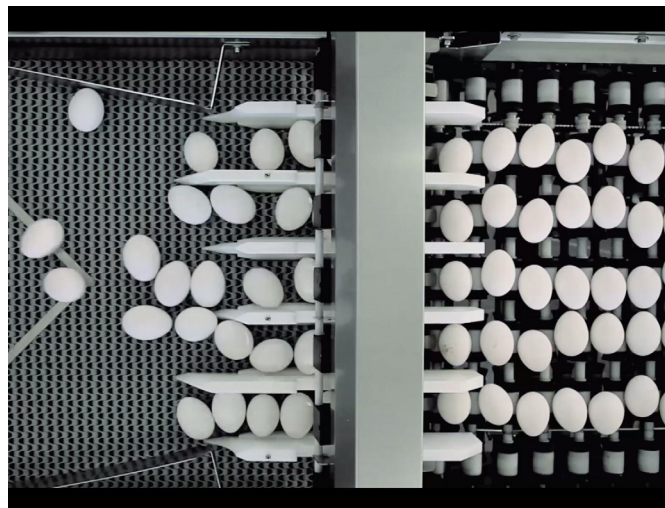
Packing eggs on a farm is a notoriously time-consuming process – or at least it was. Tackling the issue, the German based pig- and poultry-equipment specialist Big Dutchman recently launched its new BigPacker product line. Three different farm packer models are available in this range which can pack 15,000 to 25,000 eggs per hour, making them the ideal tool for small- to medium-sized poultry units.

The new BigPacker products are distributed in cooperation with the Dutch company Moba, which claims to be the world's leading manufacturer of egg grading, packing and processing equipment.

Big Dutchman says with adding the farm packer range to its portfolio it has completed its range of products to aid professional egg collection. Available in three sizes, the BigPacker machines speed up the packing process and handle eggs with ease. They are also available with a tray stacker as an extra option. The main advantage of this system, says the company, is its efficiency: the process isn't held up by waiting for a sixth egg to complete a row in each tray, and it only takes one person to operate the packing machine.

## Sanovo grader

With over 60 years experience in the egg grading industry, Sanovo has launched its new GraderPro range, calling it "the next generation of egg graders".



**NEXT GENERATION** | The Sanovo GraderPro in action





The largest-capacity machines can grade up to 800 cases per hour, and a key innovation is the GraderPro's new system that ensures eggs are handled as gently as possible, to avoid breakages. According to the company's website: "Most damaged eggs are cracked due to side impact on the eggs. Side impact appears when you transfer eggs through a machine in one direction, and while the egg is in movement, change the direction. To avoid this side impact we developed a system that only transfers the eggs in one direction at a time. We deliver eggs only one way: downwards. The downward delivery eliminates side impact and ensures exceptional gentle egg handling."

Sanovo has also reduced the track speed by up to 25 percent when compared to other manufacturers, following a rethink of the movements within the frame of the grader. Reducing this track speed, says Sanovo, should make for even gentler egg handling and a higher output of packed eggs in the process.

Some of the other advantages of the GraderPro include its simple design, which, says Sanovo, should require low maintenance, and a design feature that means each egg is fully traceable throughout the grading process.

The company has made a hygiene a strong focus of its design, making sure that all parts of the machine can be cleaned leaving no blind spots. There is therefore no need for disassembling the machine for cleaning.

### Moba egg breakers

These days, no one should have to sit for hours breaking and separating eggs, which is why Moba has developed the Pelbo Synchro egg breaker and separators. These are high-capacity machines with extremely high yields and, says Moba, proven reliability. Synchro breakers are available in five models with capacities ranging from 20,000 eggs per hour to 226,000 eggs per hour.

The highest-capacity unit, the Synchro626, is the world's highest-capacity breaker with the slowest and safest egg-handling speed found in the market, according to the company.

Moba egg breakers offer minimum whole-egg quantities, high-quality egg white (with less fat content) and an increase in yolk dry matter.



**“Using laser technology, scientists in Dresden, Germany, have been able to tell the sex of embryos at day 3.5 of incubation with a success rate of 93 percent”**

### Laser chick sexing

Culling male chicks at one day old is quite a controversial topic, so researchers are looking into new methods of determining a chick’s sex before it is born. Using laser technology, scientists in Dresden, Germany, have been able to tell the sex of embryos at day 3.5 of incubation with a success rate of 93 percent.

During the research scientists investigated optical spectroscopy to determine, non-destructively and in-ovo, the sex of early chicken embryos. The embryo’s blood-circulation system was accessed by producing a window in the egg shell and the flowing blood was illuminated with a near-infrared laser. The blood’s fluorescence was then analysed, and differences in its intensity when examining 380 eggs at day 3.5 of incubation meant that researchers could correctly identify the unhatched chick’s sex in 93 percent of cases.

The increase of fluorescence intensity between 3.5 and 11.5 days of incubation was found to be in agreement with the erythropoietic stages, thus enabling identification of haemoglobin as a fluorescence source.

Sex-related differences in the fluorescence spectrum were found at day 3.5, and principal component analysis showed

that the blood of males was characterised by a specific fluorescence band located at  $\sim 910$  nm.

As a result, supervised classification of the PC scores enabled the determination of the sex of 380 eggs at day 3.5 of incubation with a correct rate up to 93 per cent by combining the information derived from both fluorescence and Raman scattering.

### Summary

Processing eggs both on-farm and in factories has been made more efficient with modern day technology reducing the labour-intensive and time-consuming aspects of the jobs, as well as improving welfare in the case of fertile eggs and male chicks. However, it is not every farm or factory around the world that can afford this equipment. The onus is on manufacturers to develop equipment that can streamline an egg producers/processors business but at an affordable price in less developed countries. While the topic of culling male chicks remains controversial, there will always be a need for a system that can avoid this. Developers of this type of technology will be under pressure to act fast to make their research become commercially viable as soon as possible. **PD**





# Chickens agree: growing takes guts.



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# Introducing...

## The Old Cotswold Legbar

Words Ryan Johnson

The Old Cotswold Legbar is famous for its pastel-blue eggs, which come from its Chilean ancestor, the Araucana. The Araucana was brought to the UK in 1928 by botanist and explorer, Clarence Elliott from Stow-on-the-Wold.

Over the course of four generations of breeding at Cambridge University, the Araucanas, brought by Elliott and given to Professor Reginald Punnett, were bred with White Leghorns and Gold Legbars, giving rise to the Cream Legbar. What is now the Old Cotswold Legbar is a direct descendant of the Cream or "Cambridge" Legbar.

Philip Lee-Woolf from [Legbars of Broadway](#) writes, "the Cream Legbars were too inbred to be a commercial proposition for producing large egg numbers" which prompted Mr Lee-Woolf to introduce other bloodlines to the Cream Legbar, giving rise to the Old Cotswold Legbar. He describes the hens as being active, sprightly and inquisitive, with a distinctive crest and barring over the flat back and wings. Hens lay around 230-40 strong-shelled eggs in the first year and many continue to produce at seven and eight years, he writes.

Mr Lee-Woolf also explained that, if not for David Applegarth having received some hatching eggs from John Croomie who carried on breeding Cream Legbars after the Cambridge facility closed down in the early 1950s and until his death in 1988, the breed would have been lost. It was by this happy chance that Mr Lee-Woolf was able to breed the Old Cotswold Legbar, having been given some hatching eggs from Mr Applegarth.

The Old Cotswold Legbar is now primarily found at [Clarence Court](#), where the birds enjoy a life outdoors on broad pasture and lay blue eggs to the delight of many, with rich, deep golden yolks. Clarence Court also produces a number of other speciality eggs, including ostrich, quail, goose, and more.

[Cotswold Foodie Tours](#), who celebrate local, heritage food and drink wrote to us about Old Cotswold Legbars and said, "We love the pastel blue, eau-de-nil colour [of the eggs] and the flavour is superb. It is a fine example of the dedication to flavour that so many farmers, cheesemakers and fine food producers strive for in the Cotswolds." [PD](#)

# EVENTS

Poultry events from around the globe

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## 52nd EPIC (Egg and Poultry Industry Conference) 2018

Date: 4-5 November

Location: Newport, South Wales, United Kingdom

The focus of EPIC is on planning, preparing and thriving during turbulent times. The programme of speakers includes experts who will lead the charge in discussing government, industry, farming and business. Some of our young farmers will offer their perspective as well. Prepare for Tomorrow Today.

[epiconference.co.uk](http://epiconference.co.uk)

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## Poultry Tech Summit

Date: 5-7 November

Location: Atlanta, Georgia

Poultry Tech Summit is a new conference focusing on transitioning technologies from researchers and entrepreneurs into commercial applications for the benefit of the poultry industry. This event is the only one of its kind being offered to connect researchers and entrepreneurs with poultry sector technology experts, financiers, bankers and venture capitalists looking for new projects to fund.

[www.wattglobalmedia.com/poultrytechsummit/](http://www.wattglobalmedia.com/poultrytechsummit/)

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## EuroTier

Date: 13-16 November

Location: Hanover, Germany

Exhibitors from all over the world attend to present their innovations for cattle, pig and poultry farming as well as in the fields of aquaculture, sheep and goat rearing and livery yards. In addition to the latest innovations, visitors will also find a wide range of special side events – our Technical Programme that provides plenty of opportunities to learn and share information at expert level.

[www.eurotier.com/en/](http://www.eurotier.com/en/)

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## IPPE

Date: 12-14 February 2019

Location: Atlanta, Georgia

International Production & Processing Expo (IPPE) continues to grow and expand. The focus of the show is on innovative technologies, products and services to help your business grow. Networking events will bring producers and industry leaders together and education programmes, both free and fee-based, will help you to grow your knowledge and improve your business. Join 8,000 international visitors at the world's largest poultry event.

[ippexpo.com](http://ippexpo.com)

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## Northern Poultry Conference

Date: 26 February 2019

Location: Oulton, Leeds

The purpose of the conference is to support broiler growers in the North of England. The programme will cover specific broiler technical subjects along with feed and veterinary updates.

[www.poultryconference.com/NBC/overview.aspx](http://www.poultryconference.com/NBC/overview.aspx)

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## VIV Asia

Date: 13-15 March 2019

Location: Bangkok, Thailand

With more than 1,300 international exhibitors, VIV Asia offers a unique selection, comprising global market leaders and regional as well as national Asian players of growing importance. Professionals active in the production of pig meat, poultry meat, eggs, fish and dairy all have numerous reasons to meet up in Bangkok.

[www.viv.net/events/viv-asia-2019-bangkok](http://www.viv.net/events/viv-asia-2019-bangkok)

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HANOVER, GERMANY | EuroTier will be held in Hanover, Germany from November 13-16, 2018

# YOUR QUESTIONS

Poultry professional Mike Colley answers the best questions from The Poultry Site community



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## Q: What are the benefits and challenges of having a mixed-species flock of chickens, ducks and geese?

**A:** For the birds themselves, there is no advantage to having a mixed flock. Each group of birds fills a different ecological niche in its wild form. Although ducks and geese may be seen together in a wild or feral setting, they have little to do with each other. For us, though, with our desire for the eclectic, a mixed flock in the right setting makes an interesting sight and the interactions between the species can often be a source of great amusement and the occasional mystery. I myself have kept and raised such flocks including turkeys in the mix – although I had a very large garden where the grass never became poached.

The biggest challenge to keeping a mixed flock is disease, and today, with the spectre of avian influenza, this has never been of greater significance. Going back 150 years, chickens and ducks were not of great commercial interest. Yes, thousands of geese were kept for the Christmas table alongside

a few turkeys in more recent times, but nothing like the scale they are today. If, like me, you're a bit of a romantic and long to recreate those pastoral scenes from the pictures of Ludlow and the like, then sadly disease and economics have pretty much knocked all of that on the head. Saying that, in the years I had mixed flocks, even when approaching a commercial scale, I did not encounter disease in a way in which you would see masses of dead birds strewn across fields. I knew, though, from post-mortems and regular disease monitoring that subclinical forms of Marek's, coccidiosis, mycoplasma and salmonellas were ever present. If I had further intensified the operation a clinical outbreak would have been an inevitability.

The reasons for increased disease risk are less to do with mixed species and more to do with multiple sources of the original birds, plus the influx of wild populations mixing or passing close

to your flock. For instance, it is said that you should not mix chickens and turkeys because of the risk of black head (histomoniasis). The thinking around this is that black head in chickens can be subclinical on a commercial scale, but if it infects turkeys it will kill them en masse. Black head in severe cases will kill chickens as well; it works both ways.

Less foreseeable issues arise from aggression and competition for food. Cockerels and ganders have a well-deserved reputation for being vicious brutes, a characteristic they are very willing to display towards different species. Ganders will kill cockerels, grabbing them by the neck and forcing them to the ground. Randy cockerels can also present an issue for unsuspecting ducks. Although I've never seen it, it would not surprise me at all if a sex-mad drake tried to have its way with the hens. Drakes in breeding condition will literally force themselves on ducks. On water a duck might occasionally be seen scrambling for breath as a hoard of drakes jostle atop her to claim mating rights.

The answer to all these issues is to do your homework and prepare for the unexpected. Give your birds plenty of space and a source of clean water - a shower running for 20 minutes each day is better than a small, easily fouled



**“It’s possible your bird does have an allergy to something in its environment. Cockerels can be susceptible to frost bite if they have large combs or wattles so it’s best to use drinkers that don’t allow the bird to get its wattles wet”**

need to approach your vet for a topical arachnidicide. Don’t be concerned about red skin, this is perfectly normal and is a sign of sexual maturity and health. Failing that the next culprit could be a bacterial infection such as Staphylococci or a fungal infection such as a ringworm Trichophyton, Microsporum, or Epidermophyton species, again you will need to seek veterinary advice for treatment. It’s possible your bird does have an allergy to something in its environment. Cockerels can be susceptible to frost bite if they have large combs or wattles so it’s best to use drinkers that don’t allow the bird to get its wattles wet. Finally, we can talk about behavioural or neurological issues, this is seen in parrots as they pull their feathers out, but this usually relates to boredom or stress which I have not heard of or seen in poultry. Once you find the culprit to aid the healing you could put a sock over the bird’s neck to break any habitual scratching that remains.

### **Mike Colley**

*Mike has had an interest in all things chicken since he first asked his mum on the school bus “what colour eggs do different coloured chickens lay?” aged five. Over the next 45 years Mike developed his knowledge of poultry: in his backyard, breeding, hatching, showing and selling chickens, as well as in the commercial poultry industry as an Area Manager and, latterly, a Research Manager.*



pond. Provide large housing, if the flock is kept together at night, and find the resources to remove males for a time, especially around goose breeding season. Also keep things clean and provide the right dietary needs for all. Finally, never feed coccidiostats to ducks or geese, as it will poison them.

**Q: My cockerel is self-mutilating (it is not mites or other chickens). He’s made himself bleed around his wattles and plucked one side of his neck, his feet are bloodied from where he’s clawed himself. Could it be neurological?**

**A:** This is a rare complaint I have not seen in the flesh but is reminiscent of my own skin issues and those of my dog, typically scratching an irritation until it bleeds. My own issues came down to an eczema-type fungal infection on my shin

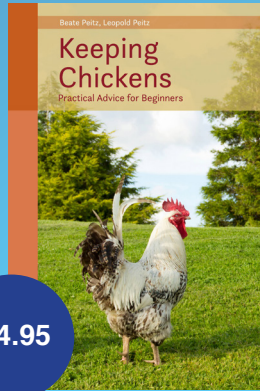
and dry skin when the weather turns cold. For my dog it was a grass allergy, which she grew out of. So, to start with, we have three culprits common to all animals. You say it’s not mites but are you aware that mites come in a variety of sizes? Red mite is big in the mite world, usually 1mm across and dark red, but there are mites you would need a microscope to see. Northern Fowl Mite, *Ornithonyssus sylviarum* (similar to red mite but does not leave the bird), should be visible or the Depluming Mite, *Knemidocoptes gallinae*, which I suspect is your culprit. This mite burrows into the feather follicles in the same way that Scaly Leg Mite *Knemidocoptes mutans* burrows into the scales on the birds’ legs. This is going to cause severe irritation so scratching and pecking are going to be the poor cockerel’s only relief. As far as treatment is concerned you’ll



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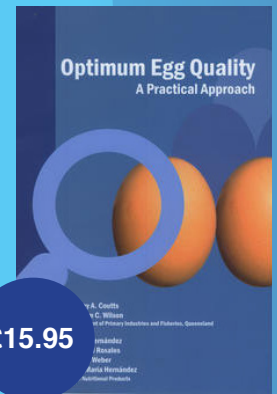
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