

# Poultry Digital



## Achieving the UN Sustainable Development Goals

Global initiatives to make food-production more sustainable – for everyone

**Inside the Sustainability issue** | Achieving the UN Sustainable Development Goals: Can livestock deliver? • The challenge of ranking hen housing systems • IKEA: Building a 'better' future for food sustainability • Herbs and Spices: A sustainable alternative to antibiotics? • Q&A with Alltech's chief innovation officer



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## “Sustainability unites us all”

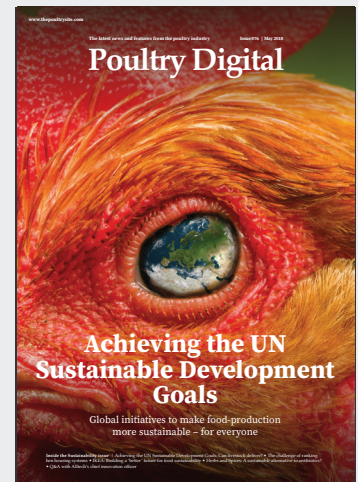
Sustainability is a word we hear and see in our daily lives more than ever before – thankfully. Despite this, however, a sustainable future remains elusive and both difficult to measure (page 12) as well as to reach.

This issue of Poultry Digital Magazine comes after two months of increasing isolationism in global politics. NAFTA talks are strained, Russian diplomats have been expelled from countries all over the world, the conclusive outcomes of Brexit remain uncertain and the US and China have entered into the beginnings of a trade war. But the world population continues to rise and it's not going to stop and wait for governments to sort themselves out.

What does this all mean for the humble chicken? Food transcends borders, and poultry is one of the most sustainable animal-source foods whether we're talking about meat or eggs. Sustainability unites us all and this issue of Poultry Digital Magazine showcases how some of the world's leaders are choosing to look beyond borders to see the end goal instead: a world without hunger, a world without poverty and a world without waste.

Read on to find out how poultry fits into the bigger picture of a sustainable world, from the UN Sustainable Development Goals (page 10) to IKEA's Better Chicken Programme (page 16), this issue even looks at herbs and spices as a sustainable alternative to antibiotics (page 20). Join us again in July for a look at welfare – both its challenges and opportunities.

Ryan Johnson | Editor



**Editor**  
Ryan Johnson

**Contributors**  
Mike Colley  
Melanie Epp  
Ryan Johnson  
Dr Lesley Mitchell  
Matthew Wedzerai

**Design**  
5m Publishing

### Contact

For editorial enquiries please contact  
[newsdesk@5mpublishing.com](mailto:newsdesk@5mpublishing.com)

For sales enquiries please contact  
[ian.hames@5mpublishing.com](mailto:ian.hames@5mpublishing.com)

5m Publishing  
Unit 10  
Southill Business Park  
Cornbury Park  
Charlbury, Oxford  
OX7 3EW

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## Asian food industry leaders put animal welfare on their agenda

INDONESIA 23 APRIL 2018

Food industry leaders in Asia attend Indonesia's first animal welfare roundtable discussion, hosted by Humane Society International



Humane Society International (HSI) recently hosted Indonesia's first corporate animal welfare roundtable, bringing together leading food service, restaurant and hospitality companies to discuss the global movement towards higher animal welfare supply chains, specifically with respect to cage-free eggs.

Public concern for egg-laying hen welfare has increased tremendously in recent years, and in response, food industry leaders in Asia and around the globe have committed to sourcing exclusively cage-free eggs.

The roundtable, which took place on 5 April 2018 at Le Méridien Jakarta hotel, included among its speakers the head of the Southern Branch of the Vietnamese Depart-

ment of Livestock Production, Do Huu Phuong, who presented on the Vietnam livestock production sector's new and growing focus on animal welfare. Sodexo, one of the largest food service companies in the world, spoke on its global cage-free egg commitment and the steps the company is taking to complete this transition by 2025, including in Indonesia and throughout Asia. HSI presented on the scientific basis for cage-free egg production, the global trend towards higher animal welfare products and its partnerships with companies and governments to successfully transition to cage-free egg supply chains and practices.

[Read the full story here](#)

## CPF announces global policy on animal welfare

THAILAND 26 APRIL 2018

Charoen Pokphand Foods PCL (CPF) announced a global policy on animal welfare in line with international animal health principles to ensure the welfare of its farm animals. The policy will be implemented by all of its business worldwide to fulfil its promise as a responsible and ethical food producer to deliver safe foods sustainability to its consumers.

[Read the full story here](#)

## BRF's CEO resigns amid EU ban on imports

BRAZIL 25 APRIL 2018

Just days after an EU ban on imports of chicken meat from Brazil, the CEO of BRF, José Aurélio Drummond Jr, has resigned, said the company in a securities filing

The announcement from the company has come three days before company shareholders meet to make decisions about a new board of directors. In the meantime, the current Chief Financial Officer, Lorival Nogueira Luz Jr, has been announced as the interim CEO.

Mr Drummond took up the post near the end of 2017, and during his time as CEO the company was implicated in accusations of corruption which involved [bribes given to health officials](#) to allow the export of meat which may have been contaminated with Salmonella. After email evidence of the latter surfaced, the police issued 11 temporary arrest orders, 53 search orders and 27 orders to bring select individuals in for questioning.

[Read the full story here](#)

# 206 million eggs recalled by Indiana farm

USA 16 APRIL 2018

**Rose Acre Farms in Indiana has recalled 206,749,248 shell eggs due to potential contamination with *Salmonella Braenderup***

"Through an abundance of caution," notes the US Food and Drug Administration, "**Rose Acre Farms** of Seymour, Indiana is voluntarily recalling 206,749,248 eggs because they have the potential to be contaminated with *Salmonella Braenderup*, an organism which can cause serious and sometimes fatal infections in young children, frail or elderly people, and others with weakened immune systems."

States which are affected by this recall include Colorado, Florida, New Jersey, New York, North Carolina, Pennsylvania, South Carolina, Virginia and West Virginia. The recall includes eggs sent to both stores and restaurants, with 22 consumers reporting illness thus far.

To check which eggs were affected, you may reference the carton UPC codes [here](#).



The FDA emphasises that this recall was voluntary and followed an FDA inspection of the farm which is reported to have approximately 3 million laying hens producing 2.3 million eggs a day with a USDA inspector undertaking daily inspections.

[Read the full story here](#)

## Eat less and better meat and dairy, say campaigners

GLOBAL 19 APRIL 2018

A powerful alliance of 52 organisations have set out their stall for how to eat meat and dairy more sustainably.

Eating Better and its partners including Friends of the Earth, Sustain, WWF and Compassion in World Farming today release a report which sets out how a 'less and better' approach to meat and dairy is better for people, animals and the environment.

The report, [Principles for Eating Meat and Dairy More Sustainably](#): the 'less and better' approach is well-timed, as the UK Government is currently consulting on a post-Brexit food and farming strategy. [Eating Better](#) is calling on DEFRA to integrate a less and better approach to meat and dairy into its plans, and to do more to encourage and reward farmers adopting more sustainable and higher welfare animal farming methods.

[Read the full story here](#)

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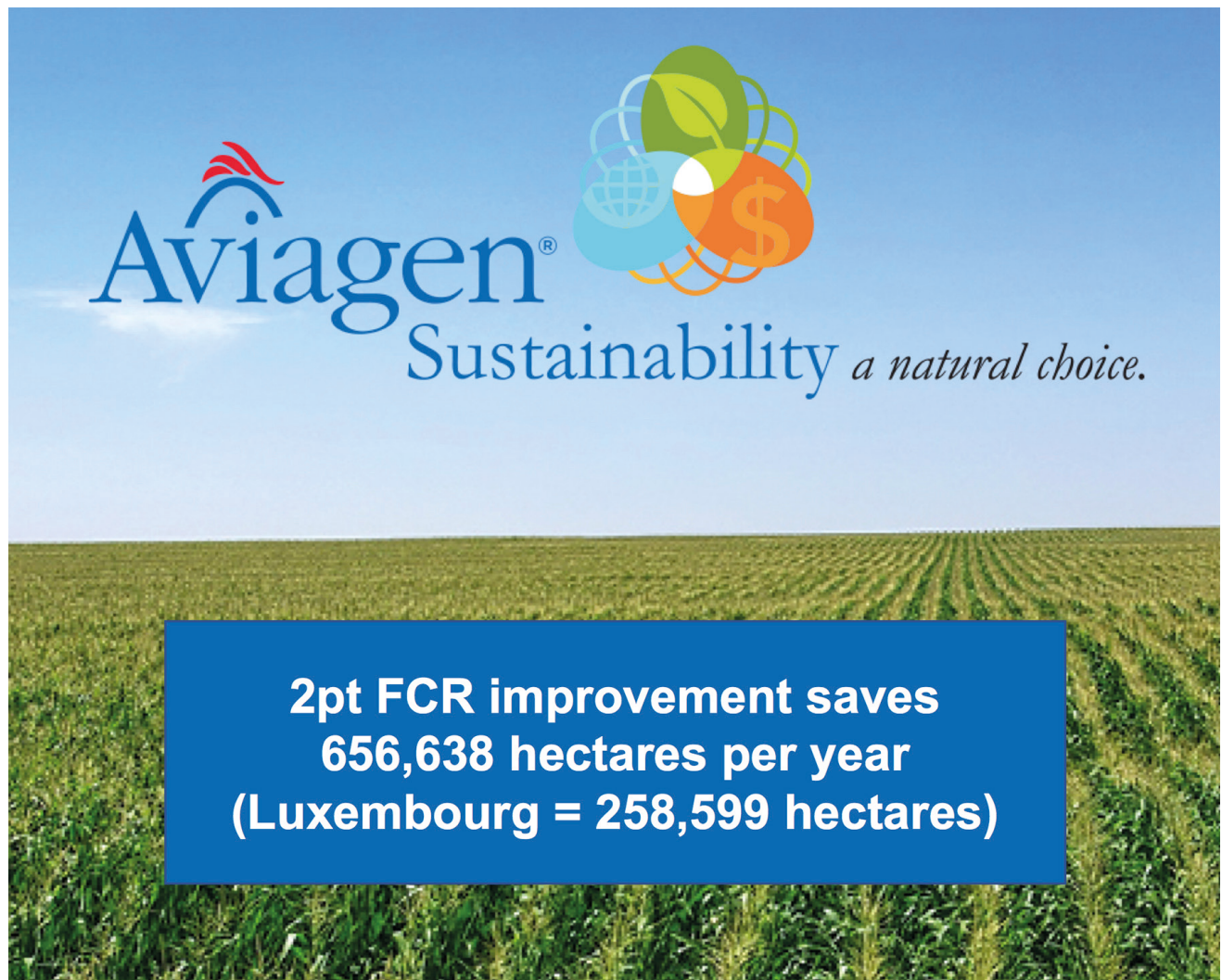
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# Breeding a sustainable planet



Global populations continue to rise, and the Food and Agriculture Organization of the United Nations (FAO) predicts that between 2012 and 2021, current meat production must increase by 38 million tonnes to meet the growing demand



Increased production poses a challenge to the environment, as livestock is responsible for nearly 18 percent of greenhouse gas emissions, the main driver of climate change. The good news is chicken production has a minimal carbon footprint when compared to its counterparts in the meat sector.

Chicken production uses less land and fresh water than beef, and greenhouse gas emissions are naturally low. In fact, chicken has the least CO<sub>2</sub> impact of all meat-producing species, and production uses less water and primary energy such as electricity and gas.

Poultry breeding companies such as Aviagen® are making considerable progress in minimizing the environmental effect of production even further. Through great strides in efficiency, they can now produce birds that require less feed

grain and water than ever before. Less feed means 657,000 hectares of arable land can be saved around the globe every year. To put it into perspective, this mass of land is twice the size of Luxembourg!

Through the genetic progress realised by Aviagen's balanced breeding programme, bird efficiencies are continually improved, along with health, liveability and meat yield. Thus, fewer resources are required to produce more high-quality chicken meat. These innovations work together to shrink the environmental footprint of production and alleviate the impact on climate change. They also make a compelling argument for chicken as the best solution to offer future generations an affordable and sustainable source of quality nutrition.

## Single vaccine developed for avian flu and duck enteritis

UK 28 MARCH 2018



The Pirbright institute has developed a single vaccine for both avian flu and duck enteritis.

For the first time, researchers led by Professor Munir Iqbal at The Pirbright Institute have been able to insert protective avian influenza virus genes into the duck enteritis virus (DEV) vaccine by using a method of CRISPR/Cas9 gene editing that allows higher rates of gene insertion. This makes the process more efficient and the resulting vaccine virus is able to protect ducks against both DEV and avian influenza.

Duck enteritis virus infects

ducks, geese and swans, causing mortality rates of up to 100%. Vaccines are widely used to reduce the impact of DEV, and have recently been utilised for delivering vaccine components of other viruses such as avian influenza. Domestic duck populations in southeast Asia also play a key role in maintaining the reservoir of severe bird flu strains and allow infection to 'spillover' into chickens, making ducks important targets for vaccination campaigns.

[Read the full story here](#)

## Manitoba, Canada hosts EU delegation to promote trade and investment

CANADA-EU 23 MARCH 2018

The Manitoba government is hosting roundtable discussions with representatives from European Union (EU) member states to raise awareness of trade and investment opportunities in Manitoba under the Canada-EU Comprehensive Economic and Trade Agreement (CETA), Growth, Enterprise and Trade Minister Blaine Pedersen announced

"We are pleased to welcome representatives from seven different European Union countries to work together to build stronger partnerships and promote trade growth," said Pedersen. "The Canada-EU Comprehensive Economic and Trade Agreement provides Manitoba industries with tremendous opportunities to export, as well as investment opportunities for EU-based companies in Manitoba."

Over the next two days, discussions with the EU delegation will include industry representatives and focus on key sectors of the economy, including agriculture, advanced manufacturing and northern economic development. The delegation will also visit two of Manitoba's cutting-edge research and innovation centres, the Composites Innovation Centre and the Richardson Centre for Functional Foods and Nutraceuticals.

[Read the full story here](#)

## Minister MacAulay participates in Advancing Women in Agriculture Conference

CANADA 28 MARCH 2018

Agriculture and Agri-Food Canada (AAFC): The Government of Canada recognises the important role women play in the agriculture and agri-food sector, as well as the Canadian economy at large.

This is why Budget 2018 launched the Women Entrepreneurship Strategy to better support women entrepreneurs, to help them grow their businesses and to remove barriers to their success.

Yesterday, Minister of Agriculture and Agri-Food, Lawrence MacAulay, and his wife, Frances MacAulay, attended the Advancing Women in Agriculture Conference in Calgary, where they spoke to participants about their experiences as dairy and potato farmers, and the importance of leadership roles for women in agriculture. Minister MacAulay emphasised the Government of Canada's ongoing commitment to helping women build capacity in the agriculture and agri-food sector.

[Read the full story here](#)

## Trump administration unveils trade actions against China

US-CHINA 23 MARCH 2018

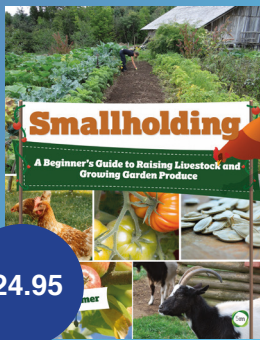
The NFU laments the Administration's 'bull in a china shop' approach and urges tactful process to address trade woes.

The Trump administration today unveiled trade actions against China that will likely spur significant retaliatory measures aimed at US agricultural products. The move is in response to a US Trade Representative office investigation on China's violations of intellectual property rights.

The National Farmers Union (NFU), a family farmer-led organisation who supports aggressive efforts to fight unfair trade practices, lamented the administration's apparent lack of a plan to safeguard the interests of family farmers.

[Read the full story here](#)

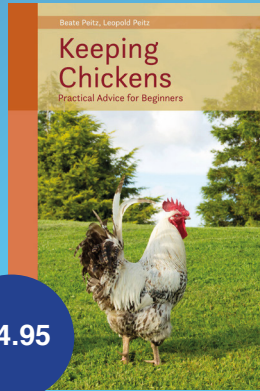




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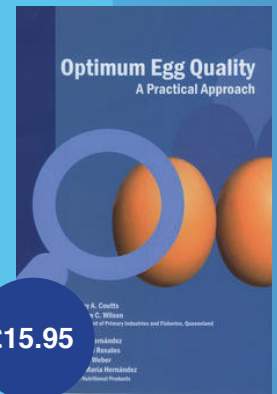
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# Achieving the UN Sustainable Development Goals

## Can livestock deliver?

Words Dr Lesley Mitchell

As the world faces ever more pressing social and environmental challenges, livestock production has come under the spotlight. The global meat industry is often vilified as a major contributor to environmental damage and climate change, and significant voices in Western society have begun to question how, and how much, animal protein we should produce.

Yet, in other parts of the world, many are experiencing hunger, malnutrition and poverty, and are unable to access sufficient animal-source foods. At the same time, the world's governments, through the United Nations, have agreed to work towards meeting the [UN's Sustainable Development Goals \(SDGs\)](#), in an effort to tackle the biggest global problems such as hunger, poverty, pollution and climate change, while driving forward economic prosperity for all. So is there a role for livestock in this emerging picture of the future? And how can the poultry sector in particular contribute to delivering the Sustainable Development Goals?

Firstly, what are the SDGs? Put simply, they are a set of 17 broad targets which the UN is calling for the world to have met by the year 2030. The goals – which include ambitions to achieve “Zero hunger”, “No poverty” and “Good health and well-being” for all – have become a global rallying point across all sectors, from governments to business to civil society, and cover key themes that are relevant to the poultry sector: the eradication of hunger and malnutrition, for example, and the injunction to deliver responsible production and consumption for economies worldwide.

The UN's goals are underpinned by key targets to transform people's lives and the planet. Increasingly, governments are refocusing their resources on the SDGs and businesses are building these goals into their strategies. [A study from PricewaterhouseCoopers in 2015](#) showed that 71 percent of business planned to embed the SDGs in their strategies by 2020, backed by expectations from 90 percent of the UK public that business would address the issue.

Jimmy Smith, director general of the International Livestock Research Institute says: “The [livestock] sector is challenged by its environmental footprint and concern that consuming animal source foods leads to poor health. In many parts of the world [we consume too much](#), but in many parts of the developing world we ought to consume more, given the importance of animal-source foods in nutrition.”

Over the past eight years, momentum has been building to shape the future of livestock production to face these challenges and contribute positively to the SDGs. [The Global Agenda for Sustainable Livestock](#) has become one of the most important destinations for those across the livestock sector to come together to drive forward sustainable practice. A partnership between stakeholders in livestock-sector development, it aims to be the go-to place for future solutions and brings together all sectors – from governments and industry to local civil-society organisations, and from small





farmers to academics. By convening through a shared commitment to the sector's sustainable development, the process is unusual in opening its doors to all those with an interest in improving the sustainability of livestock.

As Ren Wang, an assistant director general at the UN Food and Agriculture Organization notes, "The Global Agenda is committed to mobilising multi-stakeholder participation in achieving the SDGs... emphasising [that] no one be left behind."

The Global Agenda works by encouraging dialogue between its diverse members, building shared "action networks" to shape new

approaches to sustainable livestock. It encourages the wider adoption and scaling up of solutions, and works to create an enabling environment, by focusing policymakers' and governments' attention on the need for sustainable strategies. This doesn't necessarily lead to comfortable co-existence. With everyone from the largest global meat-trade associations to vociferous NGO campaigners, debates are often lively. However the focus on convening across diverse views and groups has led to some novel collaborations. For example, in the face of multiple issues of deforestation, challenge to farmers' livelihoods and increasing concern for animal welfare, a group of Colombian cattle ranchers, academics and a welfare NGO came together to demonstrate how some forms of [cattle ranching can actually protect and renew the environment](#).

One important participant in the process is the International Poultry Council (IPC), representing major poultry producers worldwide. When interviewed, Anne-Marie Neeteson, chair of the IPC's Environment and Sustainability Working Group, emphasised how far poultry production had come in 40 years in terms of working to improve significant welfare and productivity problems such as leg health and liveability. "Poultry is the major source of animal protein globally," said Neeteson. "We need and want to show where we contribute to society: from providing diverse, safe and healthy meats with a very good environmental footprint to improved welfare, continuous innovations, being a great entry into business and [poultry's] importance for the viability of the regions."

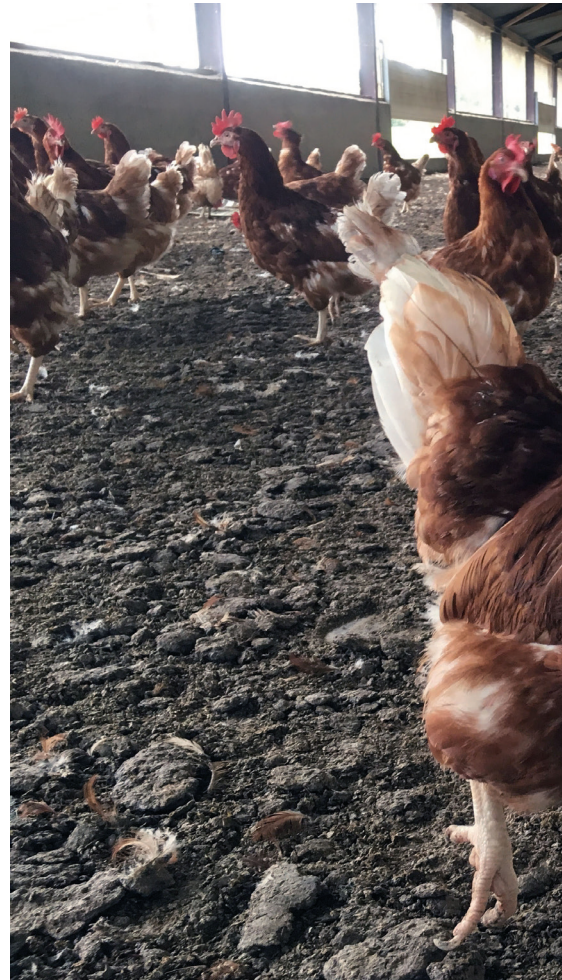
June 2018 sees the latest chance for Global Agenda members to come together to share ideas and springboard new action programmes. Titled "[Livestock on the Move](#)", the event will showcase the rapidly changing trajectory of the sector towards sustainability, with four major themes focusing on: food and nutrition security; livelihoods and growth; health and animal welfare; and climate and natural resource use. All groups and businesses are welcome to contribute to their ideas marketplace (see the link below).

It is clear that we are at a turning point in the future of food – and that a rebalancing of how much animal protein the world eats, and where and how meat products are consumed, is an inevitability. However, by putting livestock on our shared Global Agenda, the future for sustainability looks brighter. **PD**

**“The Global Agenda works by encouraging dialogue between its diverse members, building shared ‘action networks’ to shape new approaches to sustainable livestock”**

# Sustainability: The challenge of ranking hen housing systems

## Choosing the best system isn't easy



Words Melanie Epp

To date, decisions to move to cage-free egg production have been largely consumer and activist driven, especially in Europe. But in order to make a well-informed, science-based decision all possible parameters should be assessed, including hen welfare, environmental impact, egg quality and safety, worker health and safety and economics. How then do we choose the best production system, especially when animal welfare under each system both aligns and conflicts with sustainability goals?

### What do we mean by sustainability?

With retailers emphasising sustainability as central to gaining public trust and licence to operate, demand for sustainably produced products has increased. But what does “sustainably produced” really mean? In animal production, it has come to focus on welfare more than other key considerations. Joy Mench, professor emeritus in the Department of Animal Science at the University of California, Davis, pointed out the flaws in this perception in an interview at the International Egg Commission conference in Bruges, Belgium, in September 2017. While animal welfare is certainly an important part of sustainable animal agriculture, she said, the challenge is to balance it out with the other key considerations, including food security and affordability, food quality and safety, the environment and the health and economic security of workers in the industry.

Another important aspect of sustainability people often fail to consider is the purchasing preferences of consumers. “You

can produce products as sustainably as possible from the perspectives of economic efficiency, worker health and safety, the environment and animal welfare,” said Mench, “but if consumers and customers won't purchase those products then the system is not sustainable in the sense that the producer cannot make a profit.”

Mench was part of a team conducting research for the [Coalition for Sustainable Egg Supply](#) in the United States who examined three different housing systems (cage-free aviary, enriched colony and conventional cage) on a single farm. Mench and the team evaluated and compared each system in terms of various sustainability targets: animal health and wellbeing; environmental impact; food safety; worker health and safety; and food affordability.

Her report found that different hen production systems entailed different risks with regards to these five sustainability areas. For instance, under aviary and enriched-colony systems animal welfare conditions were mixed: while the team saw improvements in terms of behaviour, tibia and humerus strength and feather condition, there was also a marked increase in cannibalism and aggression, as well as keel-bone damage as a result. And while ammonia emissions declined under the enriched-colony system, indoor air quality and particulate matter emissions increased in the aviary system.

Perhaps the most impacted area was food affordability, as both the aviary and enriched colony systems led to increases in pullet costs, labour costs, capital costs and even feed costs (aviary only).



## “The 223 million birds that supposedly need to be cage-free by 2025 would come at a cost of \$10 billion”

On the other hand, free-range production systems scored high on welfare, but low on environment. In a recent interview, Professor Peter van Horne of Wageningen University & Research, explained the downfalls of those metrics. Animal welfare indicators took into account space per bird, mortality and disease, but didn't go very deep into actual welfare issues.

“I think it's too simple on welfare,” said van Horne. “It should be more sophisticated.”

In 2015, Professor Hans-Wilhelm Windhorst compiled a report based on that research and presented it to the International Egg Commission. Windhorst is a professor and scientific director of the Science and Information Centre for Sustainable Poultry Production (WING) at the University of Vechta, Germany. According to him, the most comprehensive assessment of housing systems and hen welfare conducted to date is The Review of the Canadian National Farm Animal Care Council. The review assesses space allowance, disease and mortality, hen behaviour and feather pecking and cannibalism. It does not, however, consider the other sustainability goals such as food affordability, worker health and safety and environmental impact.

This survey of housing research found that the ability to fulfill behaviour patterns, such as dust bathing, perching and foraging, was severely restrained in conventional cages, and much improved in furnished cages. In terms of disease risk and mortality, the Canadian assessment found that the risk of infectious disease and external parasites was higher in non-cage systems, while the risk of non-infectious diseases, such as fatty liver and osteoporosis, was higher in conventional cages. While mortality increases from furnished and conventional cages via indoor non-cage systems to free-range systems, the risk of injury, especially in terms of broken and damaged keel bones, was higher in non-cage systems.

It's no surprise that each system comes with risks and limitations. Where one parameter sees improvement in one system, another shows decline and vice versa. In future, anyone attempting to rank housing systems based on sustainability parameters will have to make a set of value judgments. Consumers and stakeholders will have to ask themselves: what is more important, hen health or hen behaviour? Environmental impact or animal welfare? Food affordability or worker health and safety? Beyond those questions, an important priority in the future will be trying to mitigate some of those issues that surface in cage-free systems to lower risks and curb limitations. **PD**

Mench did note that there were some drawbacks to studying the three systems on one farm. They couldn't evaluate variations in management or hen genetics, for example. They were also unable to include important economic parameters. “In our study we could only determine production and capital costs, not economic sustainability for producers,” Mench concluded.

Consumer demand is key, agreed Chad Gregory, president and CEO of [United Egg Producers](#), a cooperative that represents 95 percent of US egg production. Although retailers in the US have promised to go cage-free by 2025, he says there's a massive surplus of cage-free eggs in the US because consumer demand is low. “Some grocery store chains have been trialling ways that they can encourage the consumer to buy cage-free eggs,” he said. “They try lowering the price of cage-free eggs down to where it's close to caged. They've tried point of sales. None of it is working.”

But it's not just consumer demand he's concerned about. Gregory is also apprehensive about how much it will cost to make that switch from conventional cages to cage-free production.

“The 223 million birds that supposedly need to be cage-free by 2025 would come at a cost of \$10 billion,” said Gregory. “It's physically and financially impossible to do by 2025. Will some companies make it? Absolutely. But the 223 million birds all across the country, it can't happen.”

In the Netherlands, researchers developed sustainability metrics in order to determine a score for each system. In their report, enriched cages scored high on environment, carbon footprint and economics, but scored low on animal welfare.

# Farming in focus

## Meet the people driving change in their industry

Words Ryan Johnson

**Aidan Connolly**  
Chief innovation officer at Alltech

Aidan Connolly, chief innovation officer at Alltech, has **written extensively on recent innovations** in agriculture and livestock which may shape the landscape of food production going forward. With extensive experience working in the agricultural sector, he sits down with us to speak about how the poultry sector is progressing in terms of sustainability and beyond.

**Sustainability has become part of the vernacular of most industries. How do you feel the poultry industry is progressing in its push to be more sustainable?**

The poultry industry probably perceives itself as being very sustainable. Of course, feed conversion continues to come down, and indeed we are now predicting that we can grow a 2kg chicken with 2kg of feed by 2022. Something we forget, of course, is that chickens are not just dry matter but contain a lot of water so the theoretical feed conversion we should be able to achieve could be much lower than that.

It's also clear that we have to think about things like greenhouse gases; we have to think about the fact that a lot of water is used in the processing plant and other factors which might influence what eventually creates the footprint of the chicken. All of that said, clearly from a sustainability perspective, the poultry industry has a very good story to tell, both for broilers and for eggs, and continues to improve thanks to genetic selection and other improvements in terms of housing etc.

**What do you feel are the greatest challenges to sustainable broiler and egg production today?**

I think to a large degree we are still very imprecise in our knowledge of how to manage chickens. A lot of this is down to the fact that we have very little real data about how chick-



ens are produced at the level of individual birds. That is, we tend to manage for the average or for the flock and not for the individual bird, but within that flock there is, of course, tremendous variation.

This is even the case in terms of egg production, where we may get, if we choose, two numbers per cage. But quite often we measure egg production per line, and we certainly don't measure feed or water consumption on an individual bird basis. This is where I think the greatest improvements can be made, alongside understanding which nutrients are being consumed, potentially through in-line NIR (near infrared) systems, but aiming to become even more precise than that.

**What are some recent or potential innovations which could help to overcome these particular challenges?**

There certainly are great opportunities such as within the eight technologies that I've talked about before – things like robots and sensors: both of these can collect information and help us to manage birds more effectively without human intervention. Ultimately, I think we're moving toward machine vision and artificial intelligence where decisions will be made in a manner which is in many ways more intelligent than human decision-making.

Crypto technologies such as blockchain will allow us to have traceability systems that show the ways in which the product is moving through the system: all the inputs into the feeding of that animal and into the production of the meat at the end of the process. Overall, this will be more favourable from a consumer perspective, although frankly there is no guarantee that consumers will be happy with it. From my point of view, there is a lot of potential there.

Also, technologies such as virtual reality and enhanced reality are going to be harder to implement and we are inexorably moving towards a reliance on the internet of things.

**What will it take for high-welfare, environmentally friendly chicken and eggs to become as affordable as the conventionally raised alternatives?**

I believe that when you look at these challenges it often seems as though they are going to increase the cost of production. In actual fact, there are frequently opportunities to avoid that and arrive at a better place. We have seen this with

things such as the recycling of water and packaging which in the end bring their own economic advantages. From my perspective, welfare and environmentally friendly practices appear to be costs at the moment, but if we can understand them and increase bird welfare we may well end up with better feed conversions and feed efficiencies, less stress - and therefore less disease - and better meat quality, all of which have to be positive things. Making lemonade out of lemons as we sometimes say; perhaps it will take longer and more imagination, but embracing technology and nutrigenomics - that is, the precise feeding of nutrients from a gene expression perspective - are essential for what we need to do.

There's a quietly growing trend in agriculture to go "beyond sustainable" and "beyond organic" by striving to regenerate the land.

**How can poultry production contribute to the "regenerative agriculture" movement?**

I think that poultry probably has a better

story to tell in terms of minimal impact on the environment. The use of things like poultry litter and ensuring that that achieves better uptake with plants might allow for better retention and result in less leaching into the soil. What we all strive for is an eventual restoration of the land and to work towards making the area we're farming into a better place than it was when we found it. I am not entirely sure we have yet seen this principle truly being applied, but this might change with the advent of precision agriculture. But from my perspective this is something which can be achieved. I feel that the poultry story is not only a good story from the point of view of where the sector is at currently, but it's also a good story from the point of view of progress in the meat industry as a whole. This is a species that will most easily arrive at the next stage in sustainable farming - and that will answer questions that other species will struggle to address. **PD**

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# IKEA



**Building a 'better' future  
for food sustainability**

Words Dr Lesley Mitchell



**B**etter known for its flat-packs, furniture giant IKEA has quietly become a leading force in the future of sustainable food. Its iconic Swedish meatballs might be the reward for a hard day out shopping, but behind the fast-food counter is a range of experts rethinking the company's entire food strategy for, in its words, the "Better". Here, we take a closer look at what's shaping IKEA's thinking, and how its new approach to the food on your plate aims to transform the world we live in.

With 415 store restaurants worldwide, IKEA is now a major player in the "quick service" or fast-food sector, with its food division turning over €2 billion annually in 2017. What started as a way of encouraging shoppers to feel good and spend more in stores has become a foodie destination in its own right. IKEA's approach to sustainability has, for some time, focused on "people and planet", dealing with core issues from sustainable forestry to child labour. But with an increasing focus on food, what does this mean for the humble chicken?

By 2015 IKEA had begun its journey towards adding "animals" to its list of priorities, becoming the biggest food service provider of sustainable seafood. At the same time, it began to re-evaluate its entire approach to animal protein, culminating in the January 2018 announcement

**“Antibiotic use and climate change mitigation are two of the global poultry industry’s biggest sustainability challenges, and the IKEA programme signals clear movement on these”**

of its 'Better' sustainability programme, [with chicken the first species out of the gate](#).

What does IKEA mean by "Better"? Jacqueline Macalister, health and sustainability manager at IKEA Food Services AB says, "We believe in a new vision for the food industry. One that positively impacts the lives of people, the planet and also the lives of animals. Our goal is to source fewer animals, but to make sure those we do source are raised responsibly. We believe that animals should live decent lives."

Dr Priya Motupalli, sustainable sourcing specialist at IKEA Food Services AB, described the company's approach: "The Better programmes are holistic, and they frame our vision for sustainable agriculture. The animal welfare criteria sit in the centre, but we are also interested in public health and our environmental footprint at the farm level."

The programme emphasises specific requirements for poultry production systems, including the indoor environment, breed outcomes and health management. It aims to provide a significant step up in welfare terms from current industry norms. Maximum stocking density is set at 30kg per square metre (around 13 birds per metre at slaughter weight), daylight hours reflect a natural day length to allow birds to rest and environmental enrichments such as perches and pecking objects like straw bales are required. Breeds will be selected for slower growth. The aim of these new requirements is to achieve tangible animal welfare outcomes, such as better leg and respiratory health and better quality of life for the birds through encouraging natural behaviour.

But this is not just a welfare programme. Antibiotic use and climate change mitigation are two of the global poultry industry's biggest sustainability challenges, and the IKEA programme



**JACQUELINE MACALISTER** | *We believe in a new vision for the food industry*

signals clear movement on these. The plan will phase out routine antibiotic use by its suppliers by 2020, with a complete ban on key antibiotics that are critical for human health from 2025. A shift to deforestation-free feed, mainly sustainably farmed palm oil and soy, must be achieved by 2020 in Europe and North America.

"We try to look at the connections rather than just the trade-offs, whether it be antibiotic use or manure management. We think about it from a systems perspective, focused on how we can solve these challenges in a joined-up way that doesn't push animal welfare off the table," says Dr Motupalli.

Øistein Thorsen, director of FAI Farms, a global sustainable farming consultancy, worked closely with IKEA to develop its Better sustainability programme. "Our [FAI's] strategic approach is focused on driving meaningful improvements across supply chains," explains Thorsen, "mitigating risks and realising long-term business benefits for our partners by inspiring producers to meet and exceed key performance outcome measures – rather than telling farmers how to farm."

IKEA's new approach has not been



**IKEA** | The company's global approach to sustainability and animal welfare will apply across its 415 stores

received without controversy. In October 2017, Compassion in World Farming challenged the company for pulling out of its "Good Chicken Award" standards. And 2018 has seen the launch of a global animal welfare campaign, the "[Broiler Ask](#)", from 25 animal protection NGOs, including CIWF and RSPCA. It aims to raise the baseline for chicken welfare by securing commitments from major food companies. RSPCA campaign manager Claire Williams notes that the Broiler Ask, "provides clarity, especially for customers who would be assured that [food companies] are openly committed to addressing the most pressing welfare concerns associated with chicken production, in a challenging yet realistic time frame. Such a move would help improve the welfare of tens of millions of broiler chickens every year."

How does IKEA's plan measure up to these new welfare challenges? While IKEA has not signed up to the Broiler Ask, FAI's Thorsen notes: "The require-

## "In just a few short years, animal welfare has gone from a niche business afterthought to a central component of food sustainability"

ments in IKEA's programme are directionally aligned in vision and intent to the NGO campaign."

"We have designed the programme to be outcomes led, so it delivers our key animal welfare parameters on-farm," says Dr Motupalli.

There is no doubt IKEA's ambition for sustainability impact is huge, as it commits to adopt its new Better approach worldwide, across all its markets and all farmed species it sells. This presents a major challenge, especially where there is no model yet for higher-welfare production systems, but also a [huge opportunity](#) to drive welfare forward in

the production sector. As Thorsen notes, IKEA's new production standards "will bring more volume and critical mass to higher-welfare producers – hopefully helping to trigger wider systemic change in the sectors".

In just a few short years, animal welfare has gone from a niche business afterthought to a central component of food sustainability. While tools like the [Business Benchmark on Farm Animal Welfare](#) show the food industry still has a long way to go, IKEA's leadership in building welfare into the heart of its business sustainability strategy shows this issue is surely here to stay. **PD**



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# Herbs and spices

## A sustainable alternative to antibiotics?

Words Matthew Wedzerai

The ban of antibiotic use in most European countries, the threat of emerging pathogens and an ever-increasing demand for poultry products all put pressure on the need for sustainable therapeutic aids in poultry production. Herbs and spices, in their

various forms, offer multiple benefits for poultry health and production

If you're not familiar with the range of herbs and spices that can be used as sustainable aids to poultry health, it is important to understand that they can be added to animal diets (in feed or water) in different forms and preparations.

They can be given in whole or as extracts such as essential oils or phytonics.

### Consumer preferences

There are several reports of consumers who prefer poultry that's been fed natural ingredients as substitutes for antibiotics. A [recent survey](#) (April 2018) carried out in Thailand, for example, indicated that Thai consumers are ready to buy meat products raised with phyto-genic feed additives. Phyto-genic feed additives are standardised mixtures of herbs and spices, as well as other plants and their extracts. Phytonics are used for their impact on animal wellness, gut health and greenhouse gas emissions. The survey suggested that when consumers choose a specific brand of meat, 9 out of 10 consider the following:

- Whether meat products come from poultry fed completely natural ingredients, without antibiotics.
- Whether products reduce environmental impact.
- Whether poultry has been raised with phytonics or similar herb extracts.



- Overall, it is important to them that food choices reflect their values in relation to the environment, animal health and welfare and natural ingredients.

### Why use herbs and spices?

Several studies have indicated that herbs, spices and their extracts are important in sustainable poultry production, because: they're cost effective – cost being a major limitation in the use of synthetic drugs; they're easily available; they have no known residual effects; and they avoid the risk of developing antibiotic resistance in the human beings who consume the meat.

The beneficial effects of herbs and spices in poultry production are primarily pertinent to improving the birds' ability to digest feed. Adding herbs to feed has an effect on digestive enzymes which results in an overall improvement in performance parameters such as weight gain and feed conversion. Better utilisation of feed means less excretion, and this helps reduce environmental pressure, with the added benefit that these are natural ingredients. They also offer several health benefits including immune stimulation, anti-bacterial, coccidiostatic, antiviral or anti-inflammatory activity and anti-oxidant properties.

### Effects on health

There is growing interest in herbal feed additives in livestock production due to the development of microbial resistance to antibiotic drugs, and the implications this has on human health. As a feed supplement, herbs and spices have the following properties:

#### They are antimicrobial

Herbs and spices contain flavonoid components such as baicalin, baicalein, limonene, cinnamaldehyde, thymol, carvacrol or eugenol, among others, which exert antimicrobial effects. They act as antimicrobial agents by changing the characteristics of cell membranes, and causing ion leakage, ultimately making microbes less virulent. For bacteria, they act in the bacterial cell-wall structure, denaturing and coagulating proteins.

## “Adding herbs to feed has an effect on digestive enzymes which results in an overall improvement in performance parameters such as weight gain and feed conversion”

#### They are anti-parasitic

Several herbs such as sage, garlic, thyme, echinacea and oregano, possess anti-coccidial properties against *Eimeria* species, which reduce oocyst excretions from infected birds. Most of these herbs' anti-oxidant activity, coupled with their alkaloids (eg halofuginones), helps to significantly reduce oocyst production in birds. Studies have shown that different herbs and spices can be used as prophylactic or therapeutic anti-coccidial agents. Another example, *Curcuma longa* (turmeric), through its phenolic compound, curcumin, exerts its anti-coccidial effect in birds through its anti-oxidant action on the immune system.

Ecto-parasites such as lice and mites can also be controlled by the use of herb extracts. For example, aqueous extract of garlic and cinnamon oil have both been shown to be effective in decreasing lice and mite infestations in chickens (Jacob and Pescatore, 2011; Zenner et al., 2003).

#### They are anti-viral

Herb catechins, which are a type of natural phenol, administered through feed or drinking water, decrease replication and excretion of the H9N2 virus from

chickens in a dose-dependent manner (Lee et al., 2012). The anti-influenza activity of catechins is mainly due to direct interaction with viral HA and the inhibition of viral RNA synthesis. Ginseng stem and its leaf saponins significantly increase the serum antibody response to Newcastle disease and inactivated H5N1 and H9N2 vaccines in chickens (Zhai et al., 2011; Jiang., 2012).

#### They have anti-oxidant properties

The use of herbs reduces oxidative stress in chickens (Bharavi et al., 2010). Herbs and spices such as thyme, ginger, turmeric, marjoram, peppermint and nutmeg have been shown to have anti-oxidant properties as they contain compounds such as polyphenolics, alkaloids, lignans, flavonoids and terpenoids. These compounds neutralise superoxide, hydrogen peroxide and nitric oxide by scavenging radicals or by increasing the production of enzymes such as catalase, superoxide dismutase and glutathione peroxidase.

#### They stimulate the immune system

Herbs and spices rich in flavonoids, vitamin C and carotenoids are of benefit

**Table 1. Comparison of performance of broilers fed with dietary garlic addition (Puvaca et al., 2015)**

Form of garlic	Garlic (%)	Final body weight (kg)		Broiler hybrid	Reference
		Control	Garlic		
Powder	0.2	1.545	1.790	Ross 308	Pourali et al., 2010
Powder	0.4	2.050	2.099	Cobb 500	Issa and Omar, 2012
Powder	1.0	1.995	2.200	-	Mansoub, 2011
Powder	3.0	1.079	1.734	Cobb	Elagib et al., 2013
Raw garlic	0.5	2.035	2.193	Shaver Starbo	Onibi et al., 2009
Powder	2.0	1.965	2.056	Hubbard	Stanaćev et al., 2011
Powder	0.5	2.076	2.371	Hubbard	Puvača et al., 2015
Essential oil	0.1	1.578	1.643	Ross 308	Tazi et al., 2014

**Table 2. Growth performance of broilers (two to six weeks old) as affected by different herbs (Al-Maaty et al., 2014)**

Treatment	BW gain (g/bird)	FCR	Economic efficiency (%)
Control	1,769c	2.13a	74.3e
Cinnamon	2,189a	1.71b	116.0a
Turmeric	2,138ab	1.75b	111.7b
Ginger	2,139a	1.75b	111.0c

Means within the same column having different superscripts differ significantly ( $P \leq 0.05$ )

to the bird's immune system. Some of these plants include echinacea, liquorice, garlic and cat's claw. These plants can improve the activity of lymphocytes, macrophages and natural killer cells; they increase phagocytosis or stimulate the interferon synthesis. In addition, several herbs have been reported to have immunomodulatory effects like histamine release, modulation of cytokine and immunoglobulin secretion.

### Effects on production

There have been a number of trials on the use of herbs and spices measuring their impact on production parameters in broiler chickens. Below are highlights from some of these studies.

**“A number of herbs possess antibacterial, anti-oxidant and anti-fungal properties, which could improve the utilisation of dietary nutrients in the bird”**

#### Growth and feed conversion

Tables 1 and 2 below show the positive effects of garlic, cinnamon, turmeric and ginger on weight gain and feed conversion in broilers. Active compounds in garlic (Table 1) positively influence feed consumption, feed utilisation and bodyweight gain. These compounds are allicin, allyl methyl thiosulphonate, 1-propenyl allyl thiosulphonate and  $\gamma$ -L-glutamyl-S-alkyl-L-cysteine.

In addition, aromatic herbs have growth-stimulating, anti-microbial and anti-oxidative properties, which can contribute to better performance on broilers.

#### Nutrient digestibility

Improved nutrient digestibility (Table 3) can be attributed to the properties of herbs. A number of herbs possess antibac-

**Table 3. Nutrient digestibility and ash retention of five-week broilers fed different herbal supplements (Al-Maaty et al., 2014)**

Treatment	Digestibility (%)			Ash retention (%)
	DM	CP	EE	
Control	77.82	76.09	75.78	79.86
Cinnamon	78.64	79.82	80.93	81.30
Turmeric	78.01	79.88	79.30	80.91
Ginger	78.29	79.95	79.07	80.85

**Table 4. Carcass traits of broilers (% of live bodyweight (LBW) at slaughter) fed different herbal supplements (Al-Maaty et al., 2014)**

Treatment	LBW (g)	Dressing-out	Carcass yield	Liver
Control	2,457	75.32	70.70	2.06
Cinnamon	2,810	76.76	71.69	2.64
Turmeric	2,759	76.47	71.69	2.41
Ginger	2,760	76.54	71.70	2.40

terial, anti-oxidant and anti-fungal properties, which could improve the utilisation of dietary nutrients in the bird. Feeding herbs to broilers was reported to stimulate the secretion of digestive enzymes, and thus improve nutrient digestibility – ultimately enhancing the birds' performance (Nadia et al., 2008; Al-kassie et al 2011).

#### Meat production

The increased meat yield parameters in Table 4 may be induced by the stimulating effect of bioactive compounds on protein and fat metabolism, as reported by Osawa et al (1995) and Zhang et al (2009).

#### In summary

- The utilisation of herbs and spices has a high economic efficiency.
- They possess several health-promoting properties that include antimicrobial, anti-parasitic, anti-oxidant and immunomodulatory properties.
- They stimulate the secretion of digestive enzymes, thereby improving nutrient digestibility and growth in birds – with less secretions into the environment.
- The improved parameters of meat yield are induced by the stimulating effect of bioactive compounds on protein and fat metabolism.
- Overall, herbs and spices offer sustainable therapeutic and performance aids to poultry health and production. **PD**

# Introducing...

## The Roman Goose

Words Ryan Johnson

Originating in Italy more than 2000 years ago, the Roman Goose had a role beyond providing meat and eggs. In fact, according to the ancient Roman historian [Livy](#), it was the Roman Goose, sacred to the goddess Juno, who alerted the leaders of Rome to a night raid on the city in the 4th century BCE. The Gauls, wrote Livy, “could not elude the vigilance of the geese... This was the salvation of them all.”

In North America, the breed is largely ornamental but elsewhere it is still bred for meat and eggs (around 20-30 are laid per year). Owing to their being very alert, some even keep these geese as watchdogs.

It is for the latter reason, in addition to being among the most friendly and docile geese, that Denise Zartmann at [The Schoolhouse Farm](#) in Illinois ordered a pair Roman Geese to join their flock of Welsh Harlequin and Black Swedish ducks. “The goslings,” Denise said, “came from [Matzer Farms](#) and ever since their arrival they have been some of the most entertaining animals on the farm.”

Fittingly named after the Roman deities Juno and Jupiter, she went on to say that the geese immediately adopted the ducks as their own and spend their days protecting their new flock, sounding off the alarm if a stranger, whether human, hawk or otherwise, approaches the farm. “I even see them gazing at the sky at airplanes to assess if they’re a threat to the flock,” said Denise.

The Roman Goose is a short, chubby bird with pure white plumage, but may be found with buff colouring as well. They are known for the crest or tuft on the tops of their heads and appreciate being spoken to, especially before being approached. Denise even described her Romans as the “benevolent leaders” of their flock and everyone who meets them is fascinated by their docile nature.

“They are the first ones to ‘help’ me with my chores in the morning and like to supervise me as I feed and water,” Denise added. She added that her geese also get along with the chickens, but tend not to tolerate her rooster.

Despite being sacred to Juno, however, the Roman Goose is listed as critical by both [The Livestock Conservancy](#) and the [Rare Breeds Survival Trust](#). Farmers such as Denise Zartmann and her husband hope to change this by one day breeding their own Romans and encourage anyone with an interest in raising geese for the first time to seriously consider this breed for its hardiness, friendly nature and medium size – not to mention their tasty eggs. **PD**



# YOUR QUESTIONS

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



**Got a question?** Email [newsdesk@5mpublishing.com](mailto:newsdesk@5mpublishing.com) | Twitter [@thePoultrySite](https://twitter.com/thePoultrySite) | Facebook [/ThePoultrySite](https://www.facebook.com/ThePoultrySite) | Forum [forum.thePoultrySite.com](https://forum.thePoultrySite.com) | Post Unit 10, Southill Business Park, Cornury Park, Charlbury, Oxford, OX7 3EW

## Q: Are pastured broilers more sustainable than broilers raised indoors? What about for egg-laying hens?

**A:** The answer to this is complex and depends on your definition of sustainable. If it's just a case of which system uses the least resources, poultry kept intensively in a controlled environment wins. Simply taking feed consumption into account, the math is simple: the cost of feed used in producing 1kg of chicken meat in a modern intensive system will be around 50p, whereas, at the other extreme, raising broilers outside in the winter could increase the cost to £2.

In extensive systems you have increased labour, land usage, bedding and suchlike. You also have a constant battle against vermin and predators which are extremely difficult to exclude.

But a broader definition of sustainability may include less-obvious factors such as animal welfare and environmental impact. Any business relies on a market. If the consumer becomes more interested in welfare than price, less intensive systems may become more viable. Looking solely at welfare, it is beyond doubt that a slow-growing broiler outside in rich pasture with the sun on its back is going to be more comfortable and fulfilled than an obese broiler panting in a psychologically barren crowd. Not so in the winter, though, with the pastured broiler damp and huddling through a long, dark night with rats and badgers scratching and snorting around the perimeter.

If we were to go into environmental impact, you would have to look more at waste management. Simply put, the amount of manure alone produced in a pastured system is far greater than that in an indoor system, even taking into account the droppings shed outside.

### Q: What are the different kinds of litter available and which one is the best?

**A:** Litter can be anything that dilutes droppings, absorbs the moisture and is comfortable for poultry to walk and sit on. Long straw, chopped straw, wood-chip, wood shavings, dry soil, sand, shredded paper, miscanthus grass and grain husks are all used industrially across the world where legislative restrictions allow. To say which is best for you depends on cost, availability and whether you are going to clean out regularly or top up and clean out less frequently.

In commercial housing the volume of droppings, heat and bedding result in the bedding composting and releasing more heat, ammonia and moisture. The release of heat and moisture are beneficial as the litter breaks down and dries, but the release of ammonia can be harmful if not removed by effective ventilation.

The cheapest litter is long straw, but this needs to be topped up regularly and can be very difficult to manually remove.

Wood shavings can be very expensive even when ordered in bulk but are very absorbent, produce a nice surface for chicks and, being slow to decompose, don't foul up drinkers as fast as chopped straw.

Get wood shavings suitable for livestock, as some woods, particularly hardwoods, can contain toxins. Avoid anything that will not decompose such as plastic or rubber.

### Q: If I raise my chickens strictly outdoors, do I have to feed them or will they find enough on their own?

**A:** You'd need to have a good look at the land you have around you. Chickens are a type of pheasant and a distant cousin of the common game pheasant you see in the fields. So, in theory, if your chickens weighed around 1kg and had about an acre of space each of rich and varied farmland, in the spring, summer and autumn, they could eke out a living. But even the semi-wild pheasants must be fed by people in the winter, so, in reality, no.

However, if you grow Brassicas, have compost heaps rich in worms and don't use pesticides on your land, your chickens will find quite a lot of their own food (but you'll need to supplement it with a balanced diet). Also, if you intend to keep modern commercial poultry, their nutritional needs are very demanding so they are less likely to thrive unless plenty of commercial feed is available.

Traditional "light" poultry breeds will do well in good conditions, though, and are known for their foraging abilities. One just has to be careful that you don't go against any welfare laws which state "Poultry must have feed available at all times," which means if food is not clearly visible near the birds' housing you may be breaking rules.

### 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.*





# EVENTS

Poultry events from around the globe

## International Poultry Science Congress of WPSA Turkish Branch

Date: 9-12 May 2018

Location: Niğde, Cappadocia, Turkey

This event covers topics including environment and management, health and disease, genetics, poultry behaviour and welfare, alternative production systems, poultry production systems, and more. Speakers from all over the world will be in attendance to give talks on a variety of issues and trends. Join in for a tour of Cappadocia on the last day!

[www.turkeytimes.co.uk](http://www.turkeytimes.co.uk)

## British Pig & Poultry Fair 2018

Date: 15-16 May 2018

Location: Kenilworth, UK

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[www.pigandpoultry.org.uk](http://www.pigandpoultry.org.uk)

## World and Russian Poultry Breeding Development Trends: The realities and future challenges

Date: 15-17 May 2018

Location: Sergiyev Posad, Russia

Approximately 400 participants expected to attend and discuss breeding trends, sanitation, genetics, equipment, feed, and more.

[www.wpsa.com/index.php/calendar-home/calendar/20-innovation-support-of-russian-egg-and-meat-poultry-breeding](http://www.wpsa.com/index.php/calendar-home/calendar/20-innovation-support-of-russian-egg-and-meat-poultry-breeding)

## International Avian Respiratory Disease Conference

Date: 29 May-1 June 2018

Location: Athens, Georgia, USA

A conference concerning avian respiratory disease sponsored by CEVA, MERCK Animal Health, Boehringer Ingelheim, and BioChek.

[www.vet.uga.edu/pdrc/conference](http://www.vet.uga.edu/pdrc/conference)



**BERLIN** | The 12th "Hafez" International Symposium on Turkey Diseases is being held at the Hotel Steglitz International in Berlin, Germany on the 31st of May 2018.

## 12th "Hafez" International Symposium on Turkey Diseases

Date: 31 May-2 June 2018

Location: Berlin, Germany

The program will cover turkey disease (diagnosis and control), management and health-related problems, welfare, meat and consumer protection, legislative influences on turkey health and production.

[www.wpsa.com/index.php/calendar-home/calendar/2-10th-hafez-international-symposium-on-turkey-diseases](http://www.wpsa.com/index.php/calendar-home/calendar/2-10th-hafez-international-symposium-on-turkey-diseases)

## Poultry Information Exchange and Australasian Milling Conference

Date: 3-5 June 2018

Location: Queensland, Australia

'Supply Chain Opportunities – Farmers to Consumers' is the theme of this year's conference.

The PIX/AMC 2018 program will again feature three days filled with the latest in innovation and information, with knowledgeable industry personnel from both Australia and overseas attending. The program is streamed into chicken meat, egg production, free range and organic farming, flour milling and feed milling for all livestock species, includ-

ing beef, dairy, pigs and others. There will be topics of interest for each and every delegate. Workshops on numerous special interest areas encompassing all aspects of the poultry industry will also be on offer. For the more technically-minded, the Australasian Veterinary Poultry Association (AVPA) will again be holding a scientific meeting directly after the conference.

[www.pixamc.com.au](http://www.pixamc.com.au)

## 6th Mediterranean Poultry Summit

Date: 18-21 June 2018

Location: Torino, Italy

Mediterranean Poultry Network (MPN) of World's Poultry Science Association (WPSA) was established in 2008. The MPN of the WPSA presently operates directly under the umbrella of Working Group (WG) 11 (Education and Information) of WPSA's European Federation.

[www.mpn-wpsa.org/main](http://www.mpn-wpsa.org/main)

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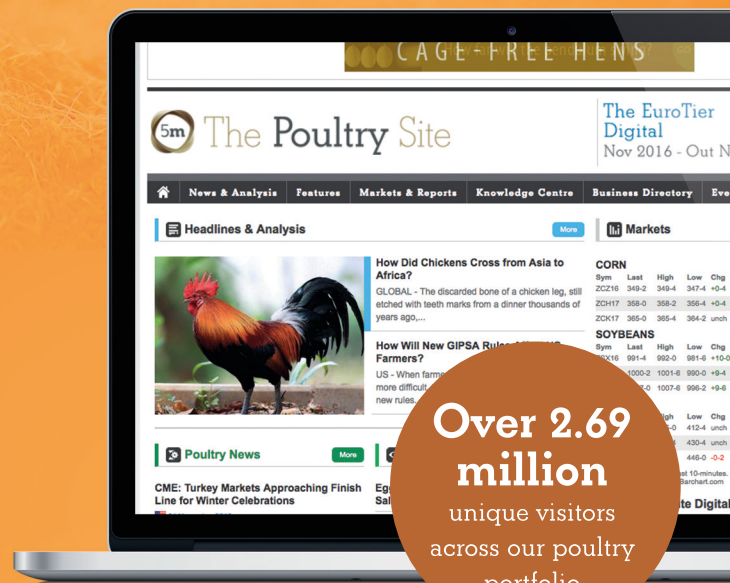
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