



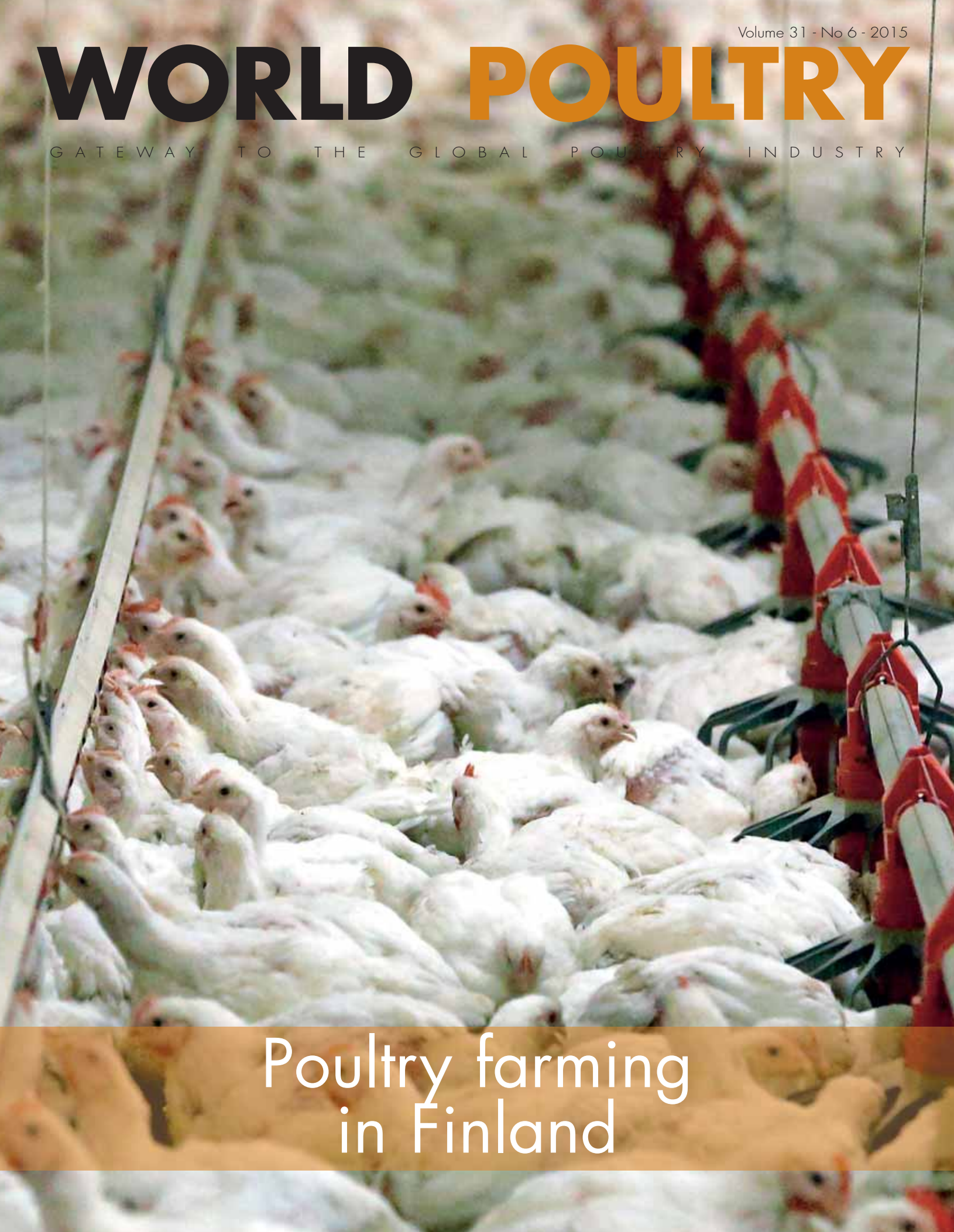
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Finnish farm focuses on three production branches



Tuomas and Anu-Maarit Välikoski are the 16th generation on a farm in Vilppula, Finland.

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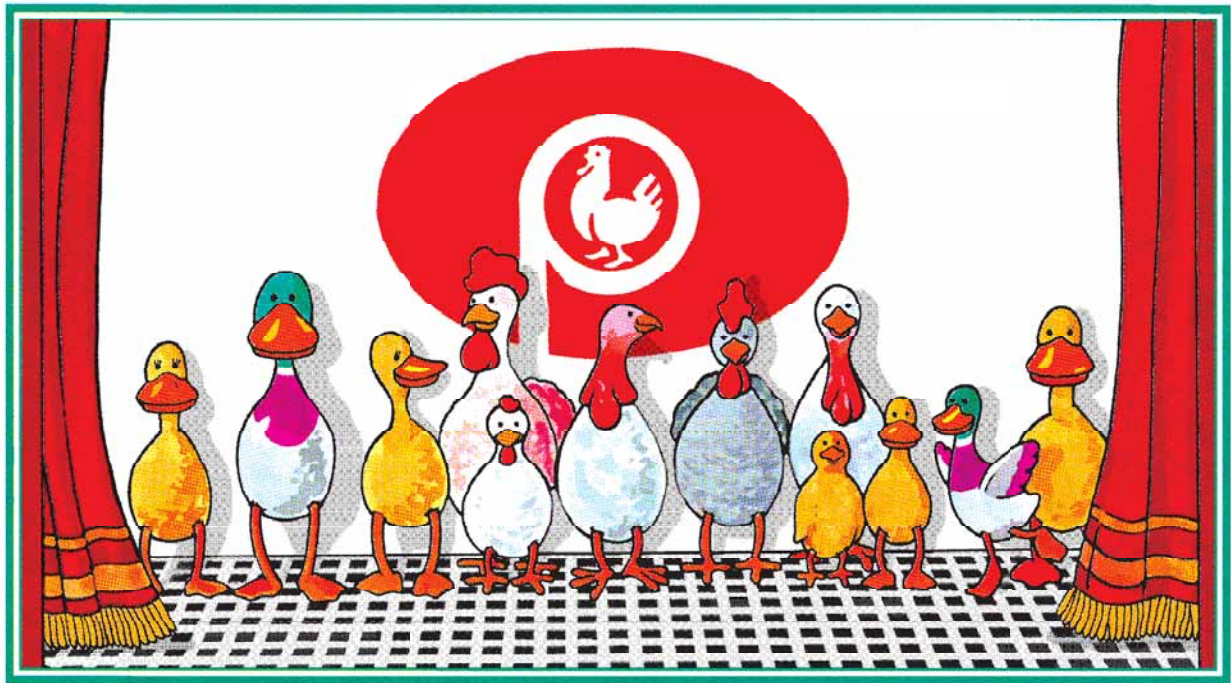
Marilia Rangel:

“My main objective is bringing more members to the IPC.”

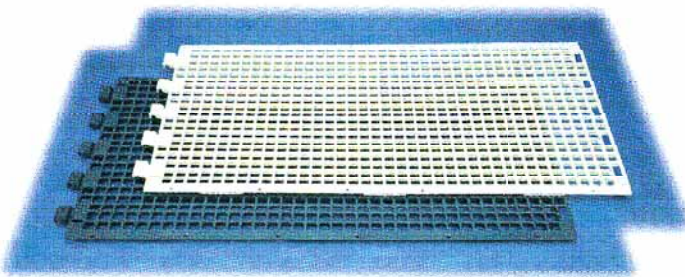
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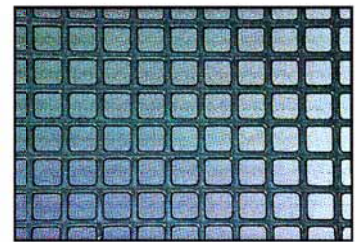
Giordano's floors: for all sizes, all ages



ECONOMICAL SLAT

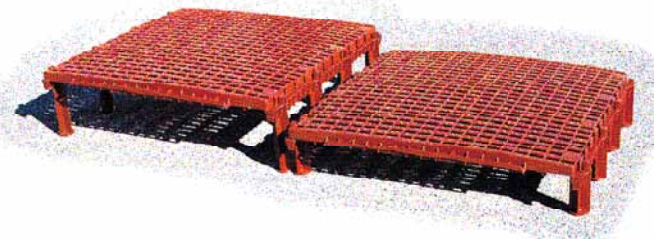


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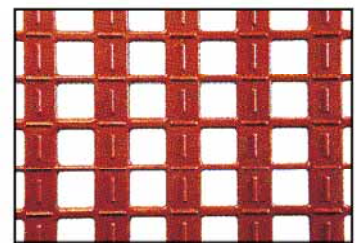


Detailed view of the grid design

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Welfare paradox

A few weeks ago I had the honour of being the chairman of a poultry conference in the Netherlands. The main topic was the future of the poultry industry in well developed countries. It is clear that when consumers have distanced themselves from agricultural society and live in a wealthy country where food security hasn't been an issue for decades, animal welfare demands soar. Ensuring animal welfare in itself isn't a bad thing of course, the question is at what price? A poultry farmer once told me that he would produce any chicken, slow growing, with access to the outdoors, fed with GMO-free feed and grown without the use of antibiotics. If that is the demand of the consumer and the farmer can make a business case on that, one should take the opportunity. This market demand, which really exists and is actively promoted by animal welfare organisations, has a flip side. Slower growing chicken and/or free range layers use up more energy to reach the production parameters set by their more efficient counterparts in conventional housing systems and thus need more feed. Making good money by improving animal welfare and tapping into wealthy consumer demands is an opportunity. However, the paradox is that less efficient production has strong negative effects. On a worldwide scale the poultry sector needs every point of (feed-)efficiency to meet the growing demand for food. For the sake of reducing malnutrition or even preventing famine one should at least know the consequences of the balance between extra animal welfare and efficiency losses.

Fabian Brockötter, editor *World Poultry*



COLOPHON

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ISSN: 1388-3119

Frequency: 10x per year

Circulation: 36,000

Managing director: Casper Niesink

Publishing director: Roel Leferink

Advertising sales manager: Amber van Remmen

Advertising sales team: Sandra Duvnjak, Geke Koudenburg, Antoinette Kwakman and Dhierinder Ramcharan

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Subscriptions: www.worldpoultry.net/subscribe

Or contact our customer service on Tel: +31 314 358359 or

email: customerservice@reedbusiness.nl

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For information regarding running subscriptions you can also contact Customer Service.

Banker: Citibank Philadelphia, Lock Box 7107, PO Box 7247-7101

Philadelphia, PA 19170-7107, USA

Account no. 4067-7681; Cheques payable to: Reed Business bv

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PO Box 4, 7000 BA Doetinchem, the Netherlands

Tel: +31 314 349 104 Fax: +31 314 342 408

Published, printed in co-operation with Senefelder Misset,

Mercuriusstraat 35, 7006 RK Doetinchem, the Netherlands

Tel. +31 (0)314 355 500, Fax +31 (0)314 355 647.

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New IPC secretary general eager to help IPC grow

The International Poultry Council appointed a new secretary general. The Brazilian Marilia Rangel will start her new role on 1 August. Bringing new members to the IPC and supporting the upcoming rapid growth of the sector are her focal points.

By Marleen Teuling

Congratulations on your new function as secretary general of the IPC. How will your background and experiences with the IPC so far help you in your work?

“For me it is an honour to be chosen as the IPC’s next secretary general. There are so many things that can be done as an international organisation. In my work as chief deputy to ABPA vice president Ricardo Santin I have been active in IPC affairs. I focused on trade promotion activities first and started working with governmental relations and conflict resolutions in the dispute segment in 2009. I coordinated sustainability issues and took part in trade and market access negotiations. In my work with the IPC I have seen it grow. The people behind the organisation are very passionate about the industry and its possibilities and I am looking forward to working along them in my role as secretary general.”

What is your view on the development of the poultry sector?

“I think the development of the poultry sector in the past and the future is very bright and there is a lot to do. In my opinion the poultry sector is going to be on top of the list of animal protein sources in the future. It will be the number one consumed meat protein among beef and pork. It will surpass pork soon. Secondly, contrary to pork there are no religious restrictions associated with chicken. Everybody can eat it. The areas where we see a vast expansion of chicken consumption is exactly in those countries where the Islamic religion is

growing. Plus, chicken is the most affordable meat protein that we have. We call it an entrance protein. As soon as wages are increasing and cities are growing – think of Africa and Asia for instance – the first thing people want to improve is their diet. Animal protein consumption as a whole will increase, and chicken is the first in line, due to the fact that their production cycle is shorter, they are easier to produce and producing them requires less resources such as grains, land and water.”

Which opportunities and weaknesses do you identify?

“The greatest strength of the poultry sector is its potential to be a great source of high quality protein to growing countries and sustainable production. It is the key strength of our sector as a whole. In terms of weaknesses there is still a lot to do about animal health. Avian Influenza (AI) for instance. We have to find out how to treat it, as it will affect all poultry produced all over the world. Every country has a market where chicken is being sold, so AI will influence every single country when it faces trade barriers. Trade barriers are complicated, as they have a side that imposes barriers and a side that jeopardises them. As IPC we can’t stand against or in favour of it, but we can help in order to find the best standards in science. By helping international organisations set standards based on science we will help make it more difficult for countries to impose trade barriers that are not consistent with the World Trade Organisation agreements.”

In what respect do you think IPC can make a difference?

“The IPC can be one of the key factors in helping industries throughout the world develop, by gathering industry associations in different parts of the world. The IPC can also work a lot with countries which are not yet IPC members. Industries that are not so much developed, but do want to develop. IPC has such a great network, which can leverage industries in those countries who want to develop. Cooperation is a key factor that IPC can contribute to the industry. Additionally,

Sao Paulo, Brazil

Rangel is the new secretary general International Poultry Council. She has worked as a foreign markets coordinator at the Brazilian Association of Animal Protein (ABPA) for eight years. She holds a Bachelor’s degree in international relations from the University of Sao Paulo.

Biography

Marilia Rangel



PHOTO: ABPA

poultry meat being the number one source of protein must be addressed carefully. We know it will be the main consumed meat but at the same time this growth has to be organised and based in good manufacturing practices. I think IPC can play a role in helping countries develop and care for sustainability. We can help them take issues such as animal welfare and animal health into account and help them organise themselves and grow their own industries. We don't grow it for them but we can give them advice and information."

What will your focal points be as secretary general?

"My main objective is bringing more members to the IPC. The IPC is very active in discussing animal health, which is a topic we want to promote, along with animal welfare, food safety and sustainability. We have been promoting these discussions and it is one of our top priorities to enhance communication of these matters outside the group of IPC members. Bringing more members will mean more people can be part of the discussions. As we grow, our presence in international discussions grows too. We are the unified voice of the sector, giving the entire poultry industry one single voice. We represent more than 80% of the global production of chicken, but it can be a 100% soon. That is my main objective: to grow our presentation within countries and within the international organisations. Reaching new countries is proactive work of the IPC. We

"The greatest strength of the poultry sector is its potential to be a great source of high quality protein."

will focus on organisations. Of course it is good to have associate members, but we will also have to focus on countries as members. They are the voice of the poultry industry within their borders. If we are in good contact with them, it will be easier to be in good contact with the industry. My second point of focus is setting up working groups, which will focus on improving food safety, consumer confidence, animal health and how to deal with AI scenarios. Both focal points fit me well. One of the things that helped me in the selection process, was the fact that by working in the Brazilian industry I travelled all over the world and I had a chance to meet many people, also in Asia and Africa. This network may play a role in reaching my objectives to help the IPC grow."

Broilers, cereals and wood

Tuomas and Anu-Maarit Välikoski are the 16th generation on a farm in Vilppula, Finland. They spread the risks by focusing on three types of agricultural production. All three on a large scale.

By Robert Bodde

‘**T**he Finnish poultry processing plants are running at 110% of their capacity. That makes contract free production of broilers impossible,” says Tuomas Välikoski. “There is simply no demand for extra broilers.” He delivers his broilers on a contract at Atria. That contract guarantees shipment of his animals at a fixed price. That price is negotiated bi-monthly between representatives of the slaughter company and a group of contract producers. “That system works fine,” says the young Finn. Välikoski has 80,000 broiler places and delivers after a growing period of 37 days on a live weight of approximately 2,300 grammes, or a slaughter weight of about 1,700 grammes. The feed conversion ratio is 2.14, calculated on the basis of carcass weight. The dropout rate varies between batches approximately from 2,5 to 3,5. In Finland antibiotics are not used as a precaution. “Now we have experienced more changes in the dropout rate in some batches because of the coli.”



PHOTOS: HENK RISWICK

Hygiene and tight controls as weapons

Strict hygiene and tight controls are the weapons in the battle against animal diseases for example coli and salmonella. The broiler houses are stocked in one day, and are emptied in two days. A contractor cleans the six stables and disinfects them two times. Then the woodchip-stove heats the stables up to 34°C, even at -25°C in the winter. Before installing the stove, the heating needed 15,000 litres of heating oil per round in winter. Now it needs 1500 cubic metres of woodchips annually. The wood comes from own forest (see box), a contractor chops four times a total of 400 cubic metres of pruning’s. With broilers in the first weeks, Tuomas and his wife Anu-Maarit check them four times a day and remove carcasses. “Those are the main sources of infectious agent,” says Anu-Maarit who like Tuomas finished an agricultural degree at a University in Helsinki. They have separate clothing and footwear for each barn, again to reduce the risks of a possible spread of infectious agents. “And that’s all you can do in a preventive way,” says Tuomas. “It’s all about how long you can keep the disease at bay. You cannot treat it other than by giving the animals extra heat if you have doubts about their health or

Company profile

Tuomas (28) and Anu-Maarit (26) Välikoski.
Mänttä-Vilppula (Finland).
80,000 broilers, 200 hectare of grain crops and 400 hectares of forest that is mainly outsourced. Some permanent hired staff together provide additional labor equivalent to one full time employee. Additionally Tuomas has a trading company with a partner in Polish silos and German trailers.





if there is an outbreak."

Three weeks after the placement of new broilers the greatest danger passes. A hired hand then takes control of the animals, so Tuomas can focus on the cash crops of the farm that has been in the family since 1580. He or his wife are, at the end of the growing period, always within ten minutes from the barn

for assistance in case of emergencies. "The power lines are not in the ground, therefore the energy supply is not reliable. The power goes off multiple times in summer."

Good margins

Per delivered broiler the price varies around the €0.15 margin.

Välkoski has 80,000 broiler places and delivers after a growing period of 37 days on a live weight of approximately 2,300 grammes.

Forest requires no labour

Poultry accounts for about 60% of the income of the young Finns. The 200 hectares of cereal farming accounts for 25% of the income, the 400 hectares of forest yields 15%. Annually, the forest needs only some calls to be made but more decision making. Some parts are now 100 years old, but most production forest is harvested in this region as it is about 60 years old. "The forest is mainly a collateral value," says the Finn. The harvesting of the wood is done by a specialised company. Replanting

is done by another company. Ten years after planting, different kinds of wood need to be removed by a third party expert. Ten to 15 years after that, the forest is thinned by another specialised company and twenty to thirty years after that, the entire forest is harvested. The wood, mostly pine and spruce, goes to a large saw mill 10 km away. The annual growth of the forest is approximately 6 cubic metres of wood per hectare. After deducting all expenses, that's good for about €180 per hectare.



The own grain crop is used for feed alongside compound feed.

With close to seven rounds per year, that makes it €81,000 per year for labour and housing costs. These are low, regarding that the youngest barn dates are from 1998. The condition is very good, you would easily think that it is 10 years younger. Given the good technical and financial results, expanding the farm is likely. But that is difficult in Finland. The two meat companies determine the production by what they purchase at contract price. Each additional supply distorts the market. "We changed a slaughterhouse one year ago because our old slaughterhouse Saarioinen sold its meat production business to Atria," Tuomas says. "Along with a fattener with 30,000 places five kilometers from here, we were the only poultry producers between the two major producing areas. For us it meant also delivering at a heavier weight. No longer for barbecue, 1300 grammes, but for parts production at 1700 grammes. And then expanding, as a new supplier to the slaughterhouse? It is in everybody's interest that expanding happens along with consumption growth. So we will wait and meanwhile expand the cash crop side of our farm."

Three weeks after the placement of new broilers the greatest danger has passed. A hired hand then takes control of the animals.



The woodchip-stove heats the stables up to 34°C, even at -25°C in the winter.

Is taking over the 'neighbour' with 30,000 broilers not an option? They find humour in the question. "They are my parents-in-law," says Tuomas laughing. "I knew my father-in-law a lot longer than I know Anu-Maarit. They will stop in five years and then we will take over their company. But in addition we would like to grow."

The Finnish broiler sector

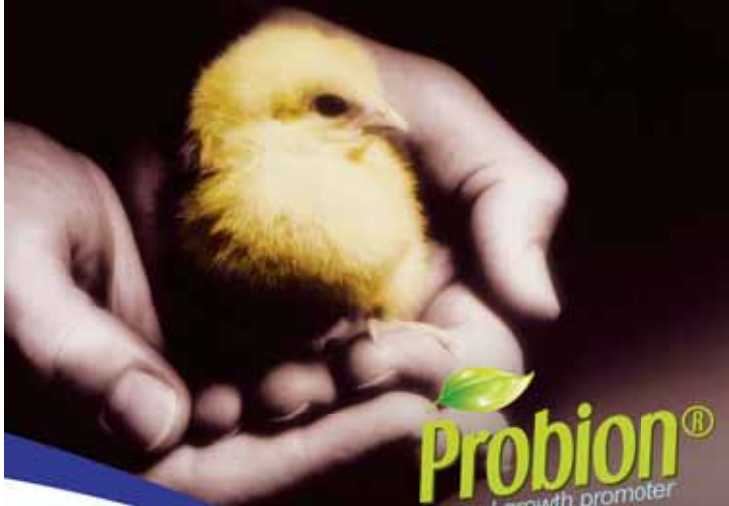
Finland has 190 producers of broilers, which annually deliver about 65 million broilers to two slaughter companies: the Atria cooperative and the listed HKscan. The self-sufficiency rate is 86%. Almost every producer uses their own wheat beside the compound feed.



For heating 1500 cubic meters of woodchips are used annually.

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Proteases: where environmental sustainability meets economic success



Dr. Adam Smith
Market Development Manager –
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Few would argue that successfully balancing environmental with economic sustainability is straightforward in the broiler industry. However in the face of fast growing global demand, it is essential for the sector's long-term development. It is widely recognised that changes are needed in how the industry operates if it is to successfully increase output without damaging the environment. One recent innovation which can help is the use of mono-component proteases, such as RONOZYME® ProAct.

Lowering costs

Mono-component proteases improve the amino acid digestibility of commonly used feed ingredients. In turn, this can enable the substitution of expensive protein-rich ingredients with lower cost and often more locally grown alternatives without any performance loss. Such changes can lower feed costs by €2-6 per ton of feed, even after taking into account the cost of the enzyme.

Increasing sustainability

Improved amino acid digestibility can also help reduce environmental impact. Reactive nitrogen compounds created by intensive agriculture (including ammonia (NH₃), nitrous oxide (N₂O) and NO_x) significantly affect environmental impact indicators such as global warming potential (GWP), eutrophication potential (EP) and acidification potential (AP). More efficient use of feed ingredients which in turn means less nitrogen in manure.

Life cycle approach

Recent Life Cycle Assessment studies* have quantified the overall environmental impact of RONOZYME® ProAct supplementation on broiler production. Results for the feed chain showed reductions in all environmental impact categories. This was particularly significant for GWP, an effect mainly associated with reduced use of soya in diets.

When the whole production chain was considered, there were relatively larger reductions in EP and especially AP (Fig). This was linked to lower housing and manure emissions, with particularly noticeable reductions in NH₃.

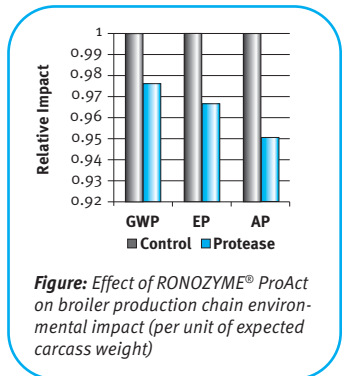
These benefits not only enhance the environment, but also provide indirect economic benefits. For example, producers can increase productivity per unit of land while still complying with ever more stringent environmental legislation requirements.

Win-win solution

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* **Effects of dietary protease on N emissions from broiler production: a holistic comparison using Life Cycle Assessment;** Leinonen, I., Williams, A. G.; 18th Nitrogen Workshop: INIAV, Lisbon, Portugal. 30 June - 3 July 2014.



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Main EU producers focus on prospects of differentiation

There is no question that the production of conventional broiler chickens for mainstream markets all around the world has a bright future. However, a new mainstream is emerging - the market for premium chickens. During the first Hubbard Premium Forum the main producers in Europe of these type of chickens exchanged knowledge and shared results on what has become far beyond a niche market.

By Fabian Brockötter

Differentiation is the name of the game when it comes to the European poultry market. Consumer demands are changing with more attention paid to animal welfare, the use of antibiotics in animal production has to come down to a minimum level due to societal demands and government legislation. Also, supermarkets are moving more and more from anonymous bulk products to added value upper market products. Wilbert Hilkens from ABN-Amro bank researched consumer behaviour and looked five years ahead. "Price still is an important factor when someone is buying poultry meat, but consumers prefer meat concepts with unique selling points such as taste, ease of use and with benefits for health of unique origin. On top of that the welfare and environmental aspects of production are a nice add-on." When it comes to production in Europe a shift to added value broiler meat is essential for profitability. Agricultural economist Peter van Horne showed that third countries have



PHOTO: BERT JANSEN

significantly lower production costs on farm and at slaughter. Compared to Brazil and Argentina the EU is about 30% more expensive and compared to Ukraine and the US about 20-25%. "At this time quota and import levies protect the EU from large volumes of import of poultry meat, but seeing what is on the negotiating table on world trade level (for instance TTIP) one can foresee scenarios with lower import levies and more market access for third countries." The weaker competitive position for the EU poultry meat industry is a threat for conventional production, according to Van Horne.

Not leading on cost price

It may be so that 'feeding the hungry world' is top of mind with many, but the question is if Europe has to feed the whole world? Europe has the technical know-how to produce at least part of the world's meat demand, but on cost price it is not leading. And societal demands won't allow the European producers to go to the proverbial maximum production possible. Even within the existing legal constraints the industry is facing headwind, especially from animal welfare and animal rights organisations. And the pressure groups have success. By targeting individual retailers they convinced them to replace the conventional chicken meat by meat from slower growing, less densely stocked birds. Market leader Albert Heijn supermarket in the Netherlands sells meat of a slower growing broiler (max 50 grammes of average daily growth) kept in an enriched environment at a maximum stocking density of 38 kilo's per square metre as their basic product. Competitor Jumbo supermarket even chooses as a



basis for a maximum of 45 grammes a day with 30 kilo's stocking density kept in daylight.

That also means that Dutch farmers producing for these supermarkets lost the cost price rat race, the slower growing birds lead to a 20% hike in production costs, leading to a price rise of €1,75 per kilo breast meat. Paul van Boekholt of Hubbard states, "Consumers in Europe are willing to pay extra for value added meat, especially when it is marketed in a specific way. With households spending up to \$US500 per week for food alone that can not come as a surprise.

That said, also in the slow growing markets there should be a continuous focus on cost price. Within its constraints it has to be super-efficient. Marketing wise, the consumers have to be continuously educated about the quality of the product, as they should also be educated about the cost of it!"

Room for differentiation

The marketing supporting product differentiation will be helped by the development of the conventional broiler on the one hand and the restructure of supermarkets on the other.

Van Boekholt explains: "In 1992 the conventional broiler took 46 days to reach its targeted slaughter weight, opposed to 56 days for the slow growing certified bird and 81 days for the label chicken. Nowadays the conventional bird is kept only 35 days and we foresee that in 2020 that will be only 32 days." The age gap between conventional broilers and 56-day broilers is growing, allowing for more differentiation. An EFSA report from 2010 showed that 7% of all broiler parent stock in the EU was

for the production of slow(er) growing broilers and that developed fast with initiatives such as the Dutch 'Chicken of Tomorrow', the French 'Certifié', the British 'RSPCA Freedom Food', the German 'Tierschutzlabel' and the Dutch 'Beter Leven' mark. "France has always had a focus on cuisine and tradition and 35% of all breeders are producing slow(er) growing broilers, but the Netherlands is at the forefront of recent development with the 'Chicken of Tomorrow' which should replace all conventional poultry meat by 2020, as agreed between the poultry sector and all supermarkets."

Supermarkets to become specialty shops

Banker Wilbert Hilkens sees other movements in the supermarket sector which are favourable towards added value products as well. "Fresh foods in 2020' is about changing consumer preferences and its implications for the supply chains of meat, eggs and vegetables. Well educated and higher income consumers look for something extra in meat, such as better taste, known origin and intrinsic value of good production."

Even more important is the supermarket sector tuning in to those demands: "Supermarkets will become more and more specialty shops, places of inspiration and taste experience. Actual food delivery will move more and more to home delivery and pick up points after internet orders. Products with the 'right story' and a meat supply chain which is in touch with the challenges of food retail and food service will be successful. The world of consumers is on the move and that is more an opportunity than a challenge."

Slow growing broilers, in this case with access to a wintergarten, have unique characteristics which are useful in marketing the product.

Charting predominant IB strains in EMEA

Infectious bronchitis poses an on-going risk to the global poultry industry. In nearly every country, field viruses of various serotypes and genotypes challenge chicken flocks, rendering vaccination a compulsory part of the veterinary health management programme.

By Richard Currie

Field strains circulating regionally and locally throughout the world are observed to vary significantly, with subsequent consequences for vaccination strategies. This is the first of an on-going series of articles that reports on observations charting predominant IB strains in Europe, the Middle East and North Africa. Choosing appropriate genetic strains in the live vaccination programme can generate a broad spectrum of protection against known field strains as well as novel viruses not expected in that geographical area. The ability to give live vaccines from day of age provides a mechanism to protect chickens from early field challenge.

Monitoring techniques

On-going monitoring of circulating field viruses is a key requirement of optimising vaccine choice and timing of application. MSD Animal Health has teamed with x-OvO Limited, an industry-leading specialist in genetic mapping of field viruses, to understand how viruses vary and the implications these variations have for the vaccination programme used.

Whilst the use of sequencing PCR techniques to create genetic “finger prints” is an important way to accurately identify IB viruses, it is difficult to understand the immunological properties of a field virus using only genetic information. Since antibodies that neutralise infections recognise the three dimensional shape of proteins on the outside of the virus, analysing the sequence of the amino acid building



PHOTO: RONALD HISSINK

blocks of these proteins gives insights into virus behaviour that are not possible with genetic sequencing alone. Most samples for these surveys were taken from the cloaca, the preferred sampling route two weeks post live vaccination. Significant numbers of samples were submitted from multiple sampling sites in the chicken. Multiple site sampling is discouraged since pooled analysis of samples can lead to false negatives when tracheal sample negatives (in general, vaccines and field viruses disappear from this organ first) can dilute down cloacal positives (where viruses tend to be detected for longer) leading to an overall negative result. Extensive surveying in the Middle East and North Africa (*Figure 1*; sampling focused on Saudi Arabia and Egypt) reveals the existence of field viruses that are distantly related to European-derived vaccines. The IB 4/91 vaccine is frequently used to broaden protection against variant strains, and when flocks are vaccinated with IB 4/91, it can be recovered with 100% homology to the precise genetic form of the original vaccine virus. Of the field strains encountered, the BSU-2 and CLEVB/IS1494/ IS885 strains (all identical in the region of the S1



gene where key genetic changes occur and define genotype) are the most significant field virus findings. In particular, the BSU-2 field virus is associated with severe respiratory problems in broiler flocks at early ages, with positive field findings occurring around two weeks of age.

European and Russian field data

During the sampling of approximately 2000 flocks from 2012-2014 in Europe (*Figure 2*; including countries on its Eastern borders and Russia), MSD Animal Health mapped the most important infectious bronchitis field virus challenges. Samples were taken in approximately even proportions from broiler flocks and future and current laying birds. Approximately 60% of samples were positive for IB, and these positive results came mostly from flocks where performance was compromised in some way (exhibiting respiratory tract pathology, mortality, wet litter/enteritis or egg drop). The findings demonstrated clearly that, viruses of the 793B and QX genotypes were the most common field infections. The 4/91 vaccine (in orange) is a 793B type virus. The 4/91 vaccine was a component of most of the vaccination

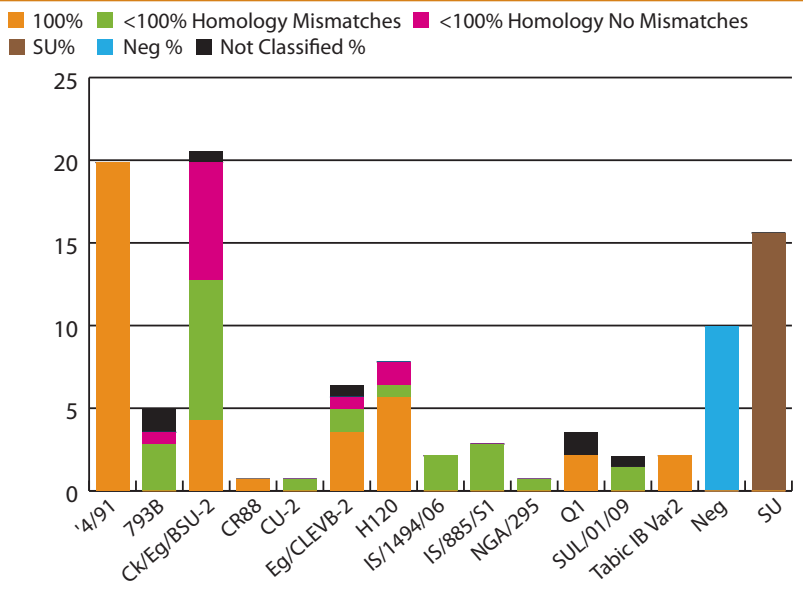
programmes and was isolated from vaccinated flocks in its original precisely defined genetic form without evidence of subpopulations or genetic drift. The 793B field strains (graphed in green in *Figure 2*) showed significant variation from its respective vaccine reference strain at both the genetic and amino acid (protein structure) levels. Note that classification of viruses in groups means they were more like the 793B (4/91) reference strain than anything else identified in global databases. However, some of the viruses are quite different from the 793B reference strains. This type of finding is supportive of the adoption of an IB protectotype multi-strain vaccination programme to broaden the protective spectrum achieved post vaccination.

QX field viruses

The second significant category identified was QX field viruses. On initial inspection, the *Figure 2* suggests most of these viruses differ from the vaccine strain (viruses identical to the vaccine strain appear in red). In order to better understand this observation, x-OvO Ltd. conducted a highly sensitive sequencing of a vial of QX commercial vaccine. At that

On-going monitoring of circulating field viruses is a key requirement of optimising vaccine choice and timing of application.

Figure 1 - Homology - Middle East 14/05/2012 - 13/05/2014.



time, only one commercial QX vaccine was being sold in the EU. Results from the field indicated that viruses with small genetic differences to the expected vaccine strain and that did not change the amino acid (protein) structure sequence were found in EU countries where the most live commercial QX vaccine is used. These small genetic changes were found as minor components of the QX vaccine vial. Hence a vaccine-origin virus category (graphed in pink) is shown above. When this vaccine origin category is removed, the dataset

demonstrates that 793B field viruses are the most prevalent finding followed by QX field viruses.

The lack of a major Massachusetts genotype field challenge is notable and may be explained by the fact that almost every chicken sampled would have had some type of Massachusetts vaccine. Vaccine of the Massachusetts and Holland strain genotypes were recovered in small quantities only. All Arkansas viruses graphed in Figure 2 were found in the United Kingdom and all variation that occurs in Arkansas positive results originates from vaccine viruses (Arkansas plus mild Massachusetts is a licenced commercial vaccine in that country) as they circulate through flocks. No true field Arkansas viruses were found in the geographical area studied.

The SU category (sample un-typable) related to finding minute quantities of infectious bronchitis genetic material that cannot be sequenced. These results are often found long after live infectious bronchitis vaccination when no infectious bronchitis field infection is present. They reflect the decay of a live vaccine in the flock over time. Only very rarely is this category an indicator of novel infectious bronchitis viruses requiring the development of new genetic sequencing protocols.

Key findings and discussion

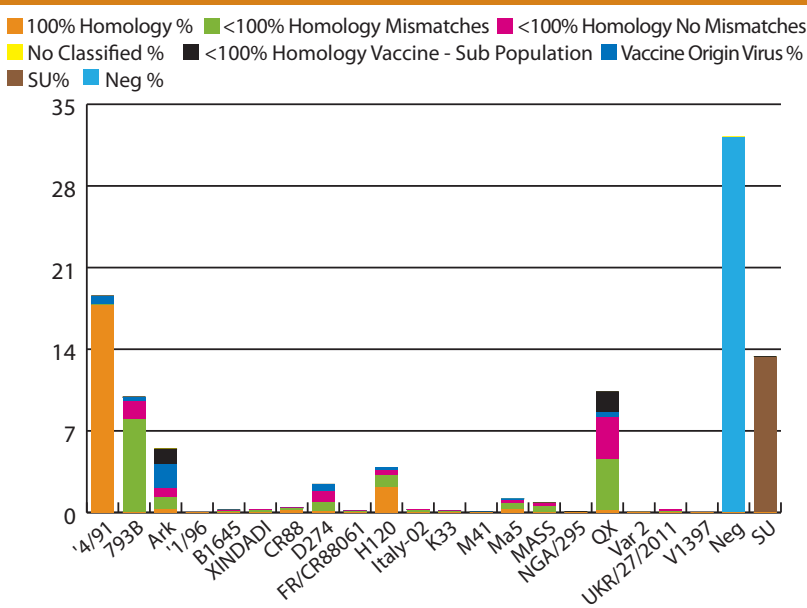
Key conclusions of this comprehensive study of the vaccine and field strains circulating in Europe and the Middle East/North Africa is the essential requirement to protect birds against 793B and QX field challenges in Europe and the necessity of broad protection to achieve the best potential performance in the Middle East.

Thus the combination of IB Ma5 plus IB 4/91 vaccine in the framework of an IB protectotype vaccination programme may be considered as a core competency from a vaccine selection perspective. The study of this vaccine combination on some 27 diverse field viruses provides the largest dataset of any commercial vaccine combination yet studied (data on file) and gives producers the most versatile way to protect against the two major circulating strains in the region together while reducing the risks associated with novel field virus introductions.

A key advantage of the 4/91 genotype when given in combination with Ma5 vaccine strain is its ability to retain a precisely defined genetic form. Field studies in France in long-lived broiler flocks (83 days of age) have documented the presence of a form of 4/91 virus that is 100% homologous to the initial vaccine virus that colonises the bird immediately after administration, at day of age, of an IB Ma5 plus 4/91 vaccination programme.

The stability of the genetic form of IB 4/91 enables monitoring of appropriate vaccine application – if the vaccine virus is not detected at time points as expected, the absence triggers an audit of vaccine application techniques to optimise the flock's vaccination 'take' response and, subsequently, the level of protection obtained. A quality control programme featuring this kind of monitoring strategy is more difficult with other commercial vaccines due to their tendencies to vary at both the genetic and the amino acid levels as they circulate through the flock.

Figure 2 - Homology Europe (incl. Ukraine & Russia) 01/09/2012 - 31/08/2014.

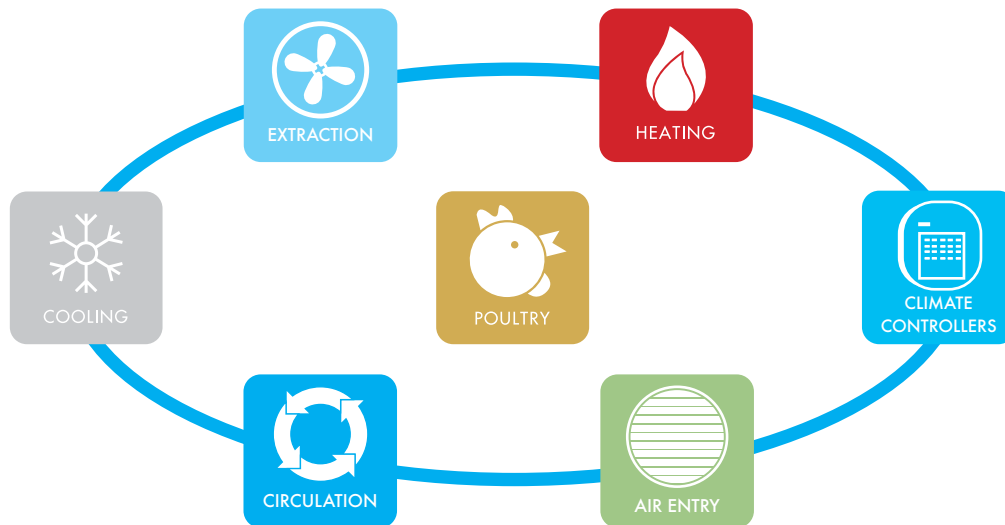




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Famous egg mountain

Dutch egg farmer Bart Gussinklo has built a famous egg mountain to promote the so called Big Challenge initiative for the fight against cancer. In about 80 hours no less than 38,800 eggs were placed in a pre-determined order. The white eggs represent the French Alpe d'Hues, the brown eggs the route to the top. The team of builders, part of the Dutch poultry industries' bicycling team challenging the Alp for a big fundraiser, hoped to get maximum attention for their initiative. The actual climb to the top, done six times during a whole day of cycling on the 4th of June, brought in €600.000, just from the poultry sector. All the money is donated to the cancer research foundation.

PHOTO: JONISTEIDERS



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Transparency is key to Turkish poultry sector growth

The Turkish poultry industry is facing several challenges and the recent level of growth witnessed is not sustainable without changes.

Turkey, like the rest of the world is facing a food availability problem with exponential population growth expected. Legislation, public opinion and media however, are all challenging factors to sustainably meet poultry meat demand.

By Rosie Burgin

"Beyond expectations" is how Dr Sait Koca describes the current state of the Turkish poultry sector. Speaking at the third International Poultry Meat Congress held recently in Antalya, Turkey, the president of Turkey's Poultry Meat Producers and Breeders Association (BESD-BİR) acknowledged the huge momentum the industry has had over recent years with poultry meat production in 2014 having a staggering 8.8% increase over 2013 and turkey meat increasing two-fold since 2000. Speaking to *World Poultry* about Turkey's export targets, Koca

said, "the poultry meat sector in Turkey provides significant added value to the domestic economy. Despite economic and political changes and fluctuations in currency, production and exportation rates show that the sector had reached its estimated targets. Poultry meat exportation increased to 396,000 tonnes in 2013 while it was 325,000 tonnes in 2012. According to 2014 year-end data, 431,000 tonnes were exported providing 700 million USD inflow of foreign currency." The primary export market for the country is Iraq who accounts for more than half of the country's exports. However, Koca warned that new export markets need to be found due to the introduction of new custom taxes in Iraq which could eventually harm Turkish exports. The industry therefore, is at a turning point and is now focusing on revision of laws with the goal of increasing its reputability in the global market. Koca urged for caution within the industry as "it is facing many challenges and this proven level of growth is not sustainable without changes."

Population growth

One of the challenges he referred to is the global problem of population growth and food availability. In Turkey alone, the population in 1950 was 21 million, in 2014 this had risen to 77.7 million and in 2050 it is forecast to grow to 93.5 million. "Therefore these same concerns we are hearing across the

world also apply to Turkey," he warned.

In terms of poultry meat production in the country this has risen to 1.9 million tonnes in 2014 and this growth is largely attributed to investments in integrations throughout the 1990's and these facilities are on top of technological developments. The target for 2030 is to reach 3.95 million tonnes for broiler production and 4.26 million tonnes for total poultry production, but "state investments and support are necessary to reach this growth by 2030," Koca concluded.

Information pollution

Another cause of concern for the Turkish poultry industry is the role of the media in forming public opinion on agricultural practises, particularly in relation to the use of Genetically Modified Organisms (GMO's) in the poultry sector. The practise is currently banned in Turkey due to legislative decision-making and in some extent to public perception and scare-mongering. At the congress Dr Ali Atif Bir of Bahçeşehir University, Istanbul, focused on information pollution by the media and its association with the poultry industry. "Public opinion shapes food policies," he stipulated while highlighting the fact that media can report situations without any scientific merit. "Unless you understand public opinion, you don't know where to start," he warned the attendees. He even gave the example of doctors encouraging patients to avoid poultry meat based on media reportings of antibiotic use in chickens. Koca also addressed this problem saying, "as a sector, we perform intensive studies regarding correct notification of the public. We conduct perception surveys continuously and determine or revise our action plans according to their results."

GMOs in Turkey

GMOs are also a topic of concern for the Turkish poultry industry. An expert in this field, Dr Selim Çetiner of Sabancı University, Istanbul, brought the GMO debate closer to home explaining how Turkey has translated EU directives into Turkish and adopted this as a directive. There are now calls among the industry to take this one step further and to adopt full compliance with EU legislation. He highlighted the legal

inconsistency in Turkey, which signed the Biosafety Law in 2010, which does not allow the production of GMO crops but permits their import based on certain conditions. Currently 13 corn varieties for animal feed are permitted and 21 GMO corn varieties to be used as animal feed are awaiting approval of the biosafety commission. "It is up to the sector to educate the consumer on how to differentiate between the scientific risks and emotional concerns," he explained in a presentation at the congress. He argued that feeding the growing population would not be possible without adapting modern practises and those who do not use GMO's will fall behind, he warned. Çetiner also referred to the global use of GMO's stating that in the last 19 years 185 million hectares, equating to 12% of the world's agricultural land has used modern biotechnology with no harmful consequences for consumers.

Food safety

Last but not least, a challenge which is prominent in both Turkey as well as the rest of the world is the issue of controlling pathogens in the poultry sector. Dr John Luchansky, USDA, spoke on this topic, highlighting the fact that food safety is a shared responsibility. The US, which has a \$1 billion research budget, spread across 19 national programs spends \$10 million towards poultry research and food safety. In many USDA studies, it would not be the turkey or chicken which were causing illnesses such as listeria monocytogenes but other base-products used before the chicken is eaten by the consumer. In 2002 a US survey revealed a 1.6% prevalence of listeria monocytogenes in poultry, which was an alarming figure considering the quantity of the product eaten. Since then policies were put in place, and through regulations and changes a 10 to 100-fold decrease was seen across 10 categories in a follow-up survey in 2012. "This is what good partnerships can do," Luchansky argued. He also highlighted some examples of measures being taken, such as the use of antimicrobials, to enhance food safety. "Although you can obviously achieve gains in food safety pre-harvest, there are also a lot of gains to be found in post-harvest situations," he concluded.

3rd International Poultry Meat Conference

Antalya, Turkey was the location for 3rd International Poultry Meat Conference held in April 2015. The biennial event organised by the Turkish Poultry Meat Producers and Breeders Association (BESD-BİR) is now celebrating its third outing. With over 1,000 attendees from 27 countries it is enjoying increased participation and success each time. The congress was opened by chairman, Prof Necmettin Ceylan, Dr Sait Koca (pictured right), president of BESD-BİR, Ibrahim Yigit, president of the committee on agriculture, forestry and rural affairs and Ibrahim Özcan, a representative from the ministry of agriculture. Dr Ceylan highlighted the importance of science when opening the event; "Poultry is a science", he stated and the reason for significant growth in FCR's for example, is not due to hormones or antibiotics but due to "science and technology advancing day by

day to benefit the sector". Along with poster presentations and a small trade-show, 19 speakers presented in three simultaneous sessions highlighting a broad range of topics relevant to the international poultry industry. Other prominent speakers included Dr Ludovic Arnaud from FEFANA and Dr Paul Hocking from the Roslin institute, UK. Others included noted poultry scientists from the Netherlands, the US, the UK and naturally Turkey.



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Day old chicks handled with care

In principle hatching an egg is not that difficult. Just adding some heat for approximately 21 days will result in a chick. Even an animal is able to perform the procedure. However, optimising the hatching process for the best day old chicks demands innovative thoughts and above all - care from hatch to arrival on farm.

By Fabian Brockötter

“When one looks at the processes in a hatchery, there are a lot of parameters which can be adjusted within the existing processes to improve the outcome. That is where in general the most efforts are put into. In doing so, one is likely to forget having a more holistic approach and seeing what is suboptimal in the first place. That is just what we did, putting the needs of the chick central”, says Erik Helmink, marketing director of Hatchtech. Together with two Dutch hatcheries, Probroed & Sloot and Lagerweij the company developed and tested the HatchCare hatcher system. The differences with normal hatcheries are immediately visible. The transparent doors give insight into a process which cannot be witnessed in other hatcheries. The chicks hatch in full light and have immediate access to feed and water. “Even for the most experienced hatchery personnel it is almost an emotional event witnessing the moment of hatch. And it is beautiful to show consumers as well,” says Edwin Paardekooper of Probroed & Sloot hatchery.

Light, feed and water

In conventional hatchery practice it can take up to anywhere from 48 to 72 hours before a chick gets access to feed and water

at arrival on farm. There is the hatch window to take in account with the first chicks hatching 30 hours before pull as well as handling and transportation time. “Streamlining these steps can lead to some time gains and should be done when it comes to handling and transportation. However, reducing the hatch window by increasing temperature or increasing CO₂ levels in the hatcher will have adverse effects on chick quality,” states Wim van de Vegte, CEO of Lagerweij hatchery.

In the HatchCare system the chicks have more space, allowing better airflow around the eggs. With maximum 55% humidity and 1500 PPM CO₂ concentration the conditions are far more favourable for the chick as in normal hatcheries. “Cooking the chicks out of the egg isn’t an option when you want to put the chicks’ needs at center stage,” Helmink grins. He continues: “In the HatchCare design the chicks hatch in light and are able to find their way to the specially developed starter feed in the specially designed crates and to the water at the sides of the hatcher. As a consequence all stress regarding the hatch window is out of the proverbial window. It doesn’t really matter how long the chick is in the tray, because all it’s needs are fulfilled.”

As a consequence, the uniformity of the chicks is better, the body mass is multiple grammes higher and the residual yolk uptake is bigger. Helmink: “Many think that the yolk sack enables the chick to survive the time from hatch to farm. In a way

Access to water in the hatcher took some dramatic design changes, but prevents dehydration of the chicks.



that is true, but when giving the chicks feed for maintenance the yolk can be used for firing up the immune system. We see better development of the small intestine, healthier, longer and heavier chicks with a more active and bigger bursa. The effects on day ten are even more significant.”

Holistic approach

Getting chicks as soon as possible on feed and water is a no-brainer, even if the actual implementation of the feed and water access in a hatcher asks for radical design changes. The HatchCare hatcher is bigger and is equipped with light and water. Feed is distributed in little feed trays in the hatching crate before the eggs are transferred from the setter to the hatching trays. “We took a holistic approach to improve hatchery processes,” Helmink explains. Instead of placing the 18 days incubated eggs flat in a hatching crate, they are placed point down in a rack suspended above the crate. When the chicks hatch, they drop down into the crate and are separated from the eggshell debris, non hatched eggs stay in the rack. Van de Vegte explains: “This really changes our process. After pulling the crates with racks on top from the hatcher the computer counts the unhatched eggs so we know how many chicks are in the crate. Faulty chicks are picked out of the crate and substituted by a healthy one.” At Lagerweij hatchery the separator which turns over the crates with chicks and eggshells for normal operation is shut down when the Hatchcare chicks are pulled, as is the chick counter. “The chicks stay in the crates in which they hatch until they arrive on farm, with no stress from wild rides over conveyors and no cross contamination risks in the hatchery.”

On farm

Transportation to the farm is done in the hatching crates. By doing so even during transportation the chicks have access to the feed. There is even the possibility to equip trucks with the same water and light system that is in the hatchers, making long haul transportation as comfortable as possible. Edwin Paardekooper of Probroed & Sloot hatchery says, “Getting the best possible chick to the farm, that is our goal. From our field experiences so far we see nice results in antibiotic use reduction and overall performance. The Hatchcare chick is more resilient to stressors. It will enable the farmer to grow them fast, that said, the risk of spinning out is higher with such management style.” Probroed & Sloot and Lagerweij have a capacity of respectively 750 thousand and 850 thousand Hatchcare chicks a week. “At first we only used part of that capacity. We chose to deliver chicks (regular and out of the Hatchcare system) to farms with two or more identical houses and which agreed to give us feedback on the chicks delivered”, says Paardekooper. The hatcheries are now in the process to up output. Paardekooper adds, “Our clients are demanding this superior chick, especially the ones which have experienced them. They actively ask for the product and won’t take ‘no’ for an answer. That is a real positive sign I reckon.”

Chicks eating even before they are pulled from the hatcher, a beautiful sight.

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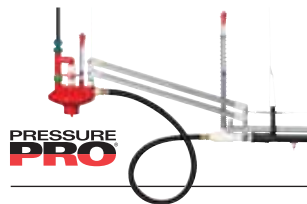
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Counteracting heat stress in poultry production

PHOTO: DELACON

Reduction in feed intake is one of the first recognisable effects of heat stress in broilers. This reduction in feed intake during heat stress accounts for up to 30% of the reduced weight gain during heat stress.

Modern broiler breeds have a continuously increasing growth rate and feed efficiency, which coincides with a reduced heat tolerance. Housing broilers at high ambient temperatures adversely affects performance, intestinal integrity, immune response, and meat quality. Feed additives that alleviate the consequences of heat stress, among which phytogetic feed additives, generally exert clear antioxidant effects.

By Dr. Jan Dirk van der Klis, Delacon Biotechnik GmbH

Birds are homeothermic. Their thermoneutral zone lies between 18 and 36°C, but the upper critical temperature is strongly dependent on the relative air humidity (RH%), which is lower at higher RH%, on breed and on production performance. Also the age of the parent stock and brooding conditions affect the heat tolerance of the offspring. As long as the ambient temperature is lower than the birds' body temperature, heat loss from the core to the skin can be increased by radiation, depending on peripheral blood flow. Poultry responds to high environmental temperatures by behavioural changes, which allow them to re-establish heat balance with their surroundings. During periods of heat stress, broilers rest more, stand more quietly or simply sit near walls or waterers. Usually, they lift their wings in order to promote cooling by reducing body

insulation. Hyperventilation or "panting" increases during periods of high environmental temperature, leading to increased CO₂ loss.

Consequences of heat stress

Reduction in feed intake is one of the first recognisable effects of heat stress in broilers. This reduction in feed intake during heat stress accounts for up to 30% of the reduced weight gain during heat stress. The major reduction is related to oxidative stress. During chronic heat stress plasma cortisol is increased and thyroid hormone levels are reduced. These elevated plasma cortisol levels stimulate muscle catabolism and lipid peroxidation in muscle tissues, which was concluded from increased malondialdehyde (MDA) contents in breast muscle of broilers. Research showed that lipid peroxidation in pectoralis muscle of broilers increased with the severity of heat stress during the last two weeks pre-slaughter. Moreover, it showed that rectal temperature of heat stressed broilers was increased by approx. 2°C comparing broilers housed at thermoneutral temperature and broilers housed at constant 34°C. Further research showed that heat stress additionally impairs immune response and intestinal integrity. The latter effect was related to lipid peroxidation in the enterocytes. Also indicated was that heat shock proteins (HSP70, a group of highly conserved protective proteins, involved in cell protection and cell repair) play an essential role alleviating heat stress response, as they stimulate antioxidant enzyme activities, relieving oxidative damage in intestinal mucosal cells during heat stress. Adverse effects of heat stress on intestinal integrity may account for reported higher translocation of *Salmonella enteritidis*, resulting in intestinal inflammation and increased *Salmonella* counts in tissues after heat stress. Additionally, nutrient digestibility was reduced during heat stress, which supports the need to use feed ingredients with a higher digestibility (and therefore dietary nutrient concentration will require the use of high quality feedstuffs) or feed additives that support nutrient digestion.

Nutritional strategies to reduce heat stress

Although effects of nutrient concentration on heat load of broilers are limited, dietary concentration reduces energy expenditure for nutrient intake and its positive effects are therefore similar to feeding good quality pellets. It is clear that by limiting excess protein and optimising the amino acid profile, metabolic energy costs will be minimised to excrete surplus nitrogen. The effect of heat stress on the optimum amino acid profile is not yet known.

A study by Gous indicated that although a higher fat content at the expense of carbohydrates will reduce metabolic heat production, effects are limited when relying on normal feed ingredients. It is well accepted that management factors like feed withdrawal 4 to 6 h prior to the hottest period of the day limit heat increment of feeding. However, broilers will only benefit from temporary feed withdrawal if the ambient temperature during night-time is substantially lower than during the day (cyclic heat stress) to enable compensatory nutrient intake during the cooler periods of the day. Heat-stressed birds dissipate up to 80% of their heat production through evaporative cooling by panting. As panting increases CO₂ losses, heat-stressed birds will benefit from a higher cation: anion balance.

Apart from optimising feed composition and structure, several (classes of) feed additives have been mentioned in scientific literature to alleviate (the consequences of) heat stress. Papers indicate that the efficacy of such additives is focused on their antioxidant effects. Heat stress induces oxidative processes in the enterocytes as discussed in 'consequences of heat stress'. Therefore, increased levels of dietary antioxidants, like a combination of vitamins A and E, reduce lipid peroxidation during heat stress. Moreover, adding vitamin E improves the immune response of heat stressed broilers. Glutamine is considered to be a conditionally essential amino acid and has been shown to improve heat stress resilience of broilers. Dietary glutamine improved growth performance and meat quality of broilers subjected to heat stress in a dose dependent manner. In addition, glutamine enhanced the expression of HSP70 in jejunal mucosa after acute heat stress, protecting it from heat stress injury via increased levels of antioxidant enzymes in the jejunal tissue. Finally, an increased antioxidant status in meat by feeding broilers diets supplemented with rosemary or its essential oils, improved meat quality and shelf life.

Phytogenic feed additives (PFAs)

PFAs represent an efficient tool to meet the current and upcoming challenges of livestock production. Many plants (e.g. thyme, oregano) show antioxidant efficacies that improve nutrient supply of cells, strengthen the cellular defence against oxidative substances and minimise damages caused by bacteria and oxidative stress, respectively. Consequently, these mechanisms lead to an improved health status of animals, allowing them to fully max out their genetic potential.

Feed additives that improve resilience against heat stress, among which phytogenic feed additives, generally exert clear antioxidant effects. Therefore, antioxidant effects seem to be the most important effects to focus on, when developing feed additives to improve heat stress resilience.

Many aromatic plants, especially those from the plant family Labiatae (e.g. rosemary, thyme, oregano and sage), have been extensively studied for their antioxidant activity. This activity is not only related to the phenolic compounds as also non-phenolic compounds may show considerable antioxidant activity by stimulating the antioxidant enzyme production. Thyme oil improved intestinal antioxidant status, reduced MDA content in the enterocytes and improved intestinal integrity.

A phytogenic feed additive, containing essential oils, herbs, spices and saponins (Biostrong 510) positively influenced gut morphology in broilers and significantly increased nutrient digestibility in a study. Moreover, it stimulates the production of antioxidant enzymes.

Due to their proven beneficial characteristics, especially with respect to enhancing digestibility and antioxidant properties, phytogenic feed additives have the potential to become a new generation of feed additives for innovative livestock nutrition and welfare. They are foreseen to be a crucial tool when it comes to counteracting heat stress and thus, being able to contribute to profitable animal production.

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Pre-incubation to improve hatchability

Even under optimal conditions, beyond one week of storage the hatchability of eggs will drop 0.5 - 1.5% per day with the percentage increasing as storage extends further. After two weeks of storage, the chick quality will also be impaired. Pre-incubation is one tool to reduce the negative effects of long egg storage.



PHOTO: TON KASTERMANS

Negative effects of long egg storage on hatchability can be reduced by pre-incubating the eggs.

By Robert Schulte-Drüggelte, Technical Service Department of Lohmann Tierzucht GmbH

pre-incubation might cause negligible or even negative improvement.

Pre-Incubation will not and cannot improve hatchability, but helps to maintain it over longer periods of time (Figure 1). Therefore it starts making sense using this technique, if eggs are scheduled for a storage period which leads to a noticeable decline in hatchability. The gains made depend on the local conditions of the flock and the storage. Improper cooling after

Learning from mother hen

A hen needs approximately 24 hours to produce an egg. Around 30 minutes after an egg is laid the next follicle is ovulated. The follicle falls into the infundibulum where the fertilisation takes place. After that the albumen is added, the egg membranes are formed and the egg shell is composed. Therefore the eggs arriving at the hatchery contain an embryo representing already 23.5 hours

Figure 1 - Hatchability of stored LSL eggs under field condition (Japan).

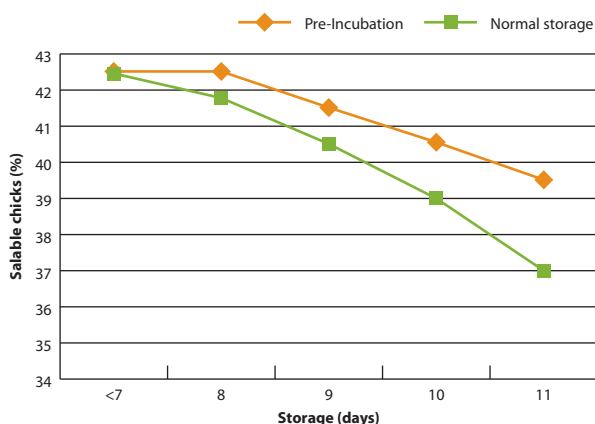
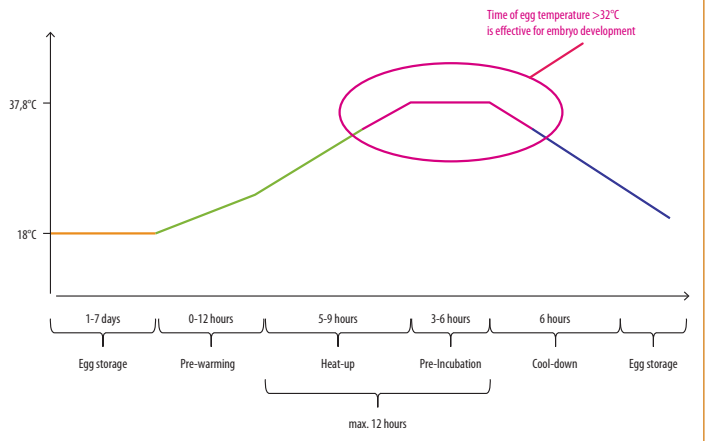


Figure 2 - Egg temperature during the Pre-Incubation steps.



development in the hen's body. However this developmental stage at point of lay is not optimal for long storage. In nature it would be altered by periodical warming of the eggs during the time the hen sits on the nest to produce the next egg of the clutch. In the hatchery it is possible to achieve similar results by incubating the eggs for 3 to 6 hours during the first storage days. This leads to further development of the germinal disk to a stage containing 60000 – 80000 cells. At this stage the embryo is less susceptible to cell death occurring during the storage period.

How does pre-incubation work?

The aim is to apply 3 to 6 hours of incubation during the first days of storage. These hours mean the time the eggs spend in 100°F/37.8°C incubation temperature. In order to bring the eggs to this temperature the eggs need to be heated-up and they also need to cool down afterwards. The different steps of the total pre-incubation procedure are shown in *Figure 2*.

Pre-incubation steps

• Egg storage

The optimal day to pre-incubate the eggs depends on the pick-up frequency and the transport conditions. While treating the eggs soon after lay gives best results one should not forget to give hatching eggs a rest after long transport and/or traying (to do the treatment eggs need to be placed on setter trays).

Hatcheries receiving eggs twice a week would usually treat the eggs one or two days after egg reception. This means the egg age during the treatment is 2-5 days. Also in hatcheries receiving the eggs just one time per week, pre-incubation can be applied successfully.

• Pre-warming

While pre-warming of the eggs is not necessary when single-stage incubators are used for the treatment, it can facilitate the process. Many hatcheries use the pre-warming or delayed-start function of the incubator to set the eggs at a time which suits the staff.

• Heat-up time and pre-incubation

The heat-up time depends on the heating capacity of the incubator and the number of eggs set. If it takes longer than 9 hours to heat-up the eggs the number of eggs should be reduced for the next treatment. The shorter the heat-up time the longer is the recommend pre-incubation time, because the effective time for embryo development during the heating-up phase is shorter. Most hatcheries work successfully with 3-4 hours on incubation temperature. Heat-up time plus pre-incubation time should not exceed 12 hours.

• Cool-down

Ideally eggs are cooled down below 25°C before they are moved back in the egg room in order to avoid warming of remaining eggs in the storage room. This cooling can be done in the incubator or in the setter room.

• Egg storage

Pre-incubation will do no harm to eggs which are set soon after the treatment. If eggs are scheduled for more than 10 days storage after the treatment it can be beneficial to do a second pre-incubation one week after the first one. If pre-incubated eggs are going to be set, the necessary incubation time is shorter than normal. The usual incubation time can be reduced by approx. 6-8 hours (compare to figure 2: time of egg temperature >32°C). Rule of thumb: If a hatchery treats all eggs scheduled for long egg storage, it can use the same setting time for all eggs. This makes life easier as usually long stored eggs would need an earlier setting time.



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USAPEEC

Jim Wayt, managing director of Intervision Foods in Atlanta, has been elected chairman of the board of the USA Poultry & Egg Export Council (USAPEEC) for 2015-16. Wayt, who succeeds chairman **Mike Little**, will head the eight-member USAPEEC Executive Committee, which sets policy and gives direction to USAPEEC, an organisation whose mission it is to promote and increase exports of US chicken, turkey, duck, and egg products worldwide.

Hendrix Genetics

With effect from 1 January 2016, **Johan van Arendonk** will join Hendrix Genetics as chief innovation & technology officer. In his new role, van Arendonk will be responsible for the global R&D strategy of Hendrix Genetics. He will lead Hendrix Genetics Research and Technology Center and Breeding IT department, as well as elevate the R&D programs for all Hendrix Genetics' Business Units in close cooperation with the respective R&D directors. He takes over the role of **Gerard Albers**, who will become director innovations for Hendrix Genetics Innovations.

International Poultry Council

Marilia Rangel of Brazil has been selected as the new secretary general of the International Poultry Council. Currently foreign markets coordinator with the Brazilian Association of Animal Protein (ABPA), Rangel began transitioning into her new role on 1 June, and will assume the duties as the IPC's first full-time chief executive on 1 August. Rangel will replace **George Watts**, who is retiring after serving three years on a part-time basis.

Coventry Group

The Coventry Group have appointed **Mike Button** as the new general manager for the Animal Healthcare division. Button brings to Coventry a vast depth of knowledge and experience gained in over 30 years in the feed, production, equipment and animal health sectors.

Roxell

Chris Pankey has joined Roxell as area sales manager for the south eastern region of the United States. As representative for the regional sales and customer support for the implementation of pneumatic and hydraulic systems

in a wide variety of manufacturing environments, Pankey leaves Total Hose Parker Store to join the Roxell US sales team.

Olmix

French animal nutrition company, Olmix Group, has appointed new marketing executives to support its global expansion. **Danièle Marzin** has been appointed as marketing director and **Sylvain David** as market manager. Marzin will lead the global marketing team of Olmix and develop marketing strategies for the group's existing and new products. She has over 16 years' experience in the feed industry, starting with Nutreco and most recently with Neovia.

As the market manager, David will be responsible for commercialisation of feed additives for Olmix in France and other European countries such as Belgium, United Kingdom, Switzerland and Ireland. He spent 10 years at French feed additive firm Nor-Feed, firstly as product manager and then as area manager overseeing the business in France, Belgium, the Netherlands and South East Asia.

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Chemical and natural antimicrobials on poultry products

Among all types of food items associated with foodborne illness, poultry products rank number one in terms of the annual estimated cost of illness (\$2.4 billion) and loss of quality adjusted life year. To reverse this trend, the USDA announced additional regulations for poultry processors to further reduce *Salmonella* and *Campylobacter* in poultry products. Treatment of processed poultry products with antimicrobials is one of the most effective strategies for minimising consumers' risks associated with consuming poultry products. Antimicrobials used in food products are classified under the broader heading of 'preservatives'. The term 'antibiotics' is often also used as a synonym to an antimicrobial drug. However, antibiotics are used to treat live poultry before slaughter in order to maintain the health of the animal during growth. The antimicrobials discussed here, are compounds typically used after slaughter to prevent the growth of pathogenic and spoilage micro-organisms and to extend the shelf-life of these products. Antimicrobials can be either



PHOTO: AN WILLEM SCHOUTEN

High concentrations of antimicrobials might adversely affect the product in terms of its sensory attributes.

natural or chemical, which may affect the sensory attributes at elevated concentrations, such as surface colour, odour, flavour, taste, and texture of the poultry products. Antimicrobial activity of a treatment agent against target micro-organisms varies with the concentration of the agent. In many cases, high concentrations are needed to achieve the desired antimicrobial effect. However, higher concentrations of antimicrobials might adversely affect the product in terms of its sensory attributes.

Thus, when selecting antimicrobials for use in poultry processing, it is vital to consider the antimicrobial-induced changes in sensory aspects from the consumers' perspectives. Many consumers evaluate the quality of poultry meat based on their sensory attributes and acceptability. In spite of its importance, there has been no systematic review on the influences of antimicrobials on sensory aspects of poultry products. S. S. Samant, P. G. Crandall, C. O'Bryan, J. M. Lingbeck, E. M. Martin and Han-Seok Seo, *Poultry Science* 94,1699–1710

Pasture management in organic poultry production systems

In Europe organic farming practice is guided by rules and aims as formulated in EU regulations, which includes the use of farm-own feed, no preventive allopathic veterinary medication, access to pasture, low stocking density, slow growing genotypes and longer duration of production.

Outdoor access is a defining characteristic of organic poultry that provides poultry with fresh grass, insects and worms that may lead to enhanced product quality. There is evidence that meat from pastured-based poultry may contain some additional nutritional benefits through lower fat content as well as higher vitamin and mineral contents. Under good pasture management, improved bird health and welfare can be achieved. Pasture management include aspects of maximising the birds foraging behaviour, feeding management, pasture rotation, stocking densities, the mitigation of climate variations and disease control, preventing predation and optimising of housing systems.

Organic meat production involves potentially higher microbiological risks due to the outdoors raising, the prohibition of the use of antimicrobials and the use of small

slaughtering facilities in some occasions. Apart from these food safety issues, pasture-raised poultry have higher vitamin and mineral contents, and access to pasture may contribute to

poultry flavour.

E.N. Sossidou, A. Dal Bosco, C. Castellini and M.A. Grashorn, *World's Poultry Science Journal*, 2015, 71, 375-384



PHOTO: ROEL DIJKSTRA

Under good pasture management, improved bird health and welfare can be achieved.

Working towards tailor-made AI solutions

It's more than obvious that wild birds in their migration trips are not listening to our past and recent discussions about how to get Avian Influenza under control. It's more than evident that biosecurity standards and AI crisis standards are not as standardised as the 'standard' denomination deserves.

Cultures, economies of scale, trading interests and other financial consequences after outbreaks can disturb this afore-mentioned 'standard'. Looking for a global solution seems to be close to utopia, especially with under-pressure conditions as it is today. Looking for a global solution, seems to always offer specific solutions for each individual outbreak. Considering that animal protein is a fundamental source of food for the entire human race, the adoption of daily, tailor-made, locally based measures is a must. Today's mature poultry industry cannot be blocked, while waiting for the magic solution to arrive. Countries with a high level of poverty shouldn't be driven by alarming messages, closing entrance doors with overly-secure protection decisions. Eventual temporary panic must not drive decisions with long-term effects.

Standards are desirable, necessary even, for harmonised growth, but also daily decisions are needed based on particular scenarios. Otherwise there is a high risk of putting our industry reputation and high level of poultry know-how one step backwards.

Javier Ramírez is the managing director at one of the world's leading layer breeding company - Lohmann Tierzucht in Cuxhaven, Germany. Born in Sinarcas, Spain, Ramírez has a Bachelor degree in veterinary medicine, specialising in animal production and economics. After spending a long time in the sectors of nutrition and technical services for poultry, he progressed into the poultry breeding sector where he has been active for 20 years now.



Javier Ramírez Villaescusa, Lohmann Tierzucht GmbH



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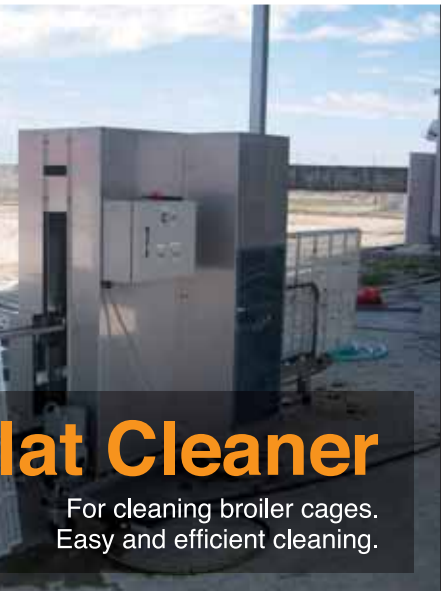
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