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Difficult times persist for global poultry producers, but long-term outlook positive

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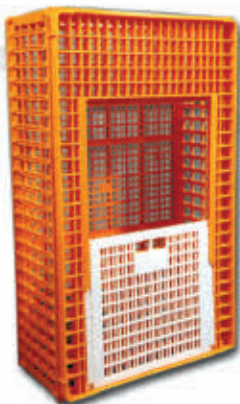
Can developments in disease diagnostics offer greater control for poultry producers?

Are broiler prestarters worth the cost?

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Poultry Line

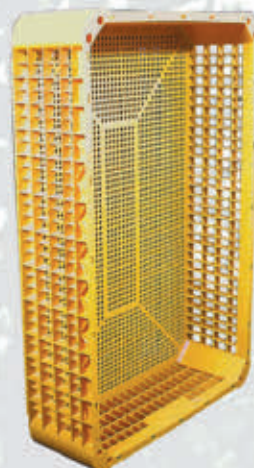
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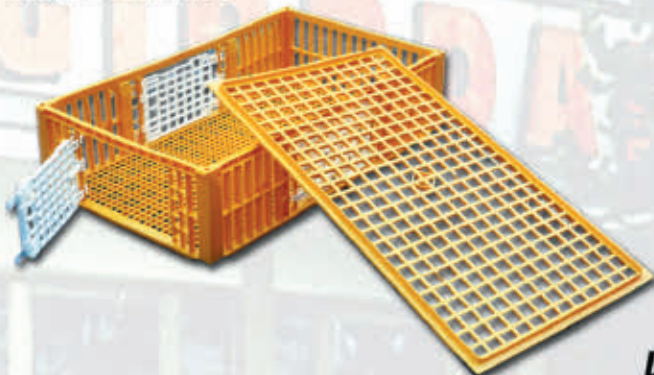
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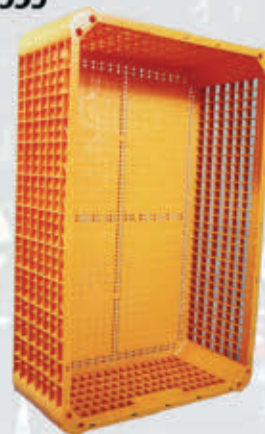
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EDITOR'S FOCUS *a regular look at industry key players*

Inprovo – Spain's interprofessional egg and egg products association

Spain's interprofessional egg and egg products association, Inprovo, was established in 1997 and brings together the various Spanish associations whose members produce, process or sell eggs.

The association defends the common interests of its members, promotes the standing of its members and their products, and acts as a meeting point for the self-regulation of the sector.

Inprovo works with similar and related industry groups in Southern Europe to promote and strengthen the voice of Southern European producers in any European Union decisions and to define common interests and strategies. It has developed a strong network of



contacts and works closely with the Spanish Ministry of Agriculture.

Among the association's objectives are to improve the understanding, efficiency and transparency of the market, to ensure knowledge of consumer preferences, to ensure fair competition and to develop mechanisms for self-regulation.

It also seeks to improve the quality and raise investment in the food chain, and it promotes research and development into innovative processes to advance the sector.

For more information, visit: www.inprovo.es □



Learn more about the companies mentioned in this issue

WATT has collected data on more than 800 poultry producers from around the world and made it available online. This

comprises data on each company's production of poultry and other products, types of poultry produced and contact details.

Whether you need to learn more about a specific company and what its interests are, or whether you want to find out which are the key players in a region, the World's Top Poultry Company Database can be easily searched using specific company name, by region, or by country.

Following registration, which is free, the database can be accessed at: www.WATTAgNet.com/worldtoppoultry.html.

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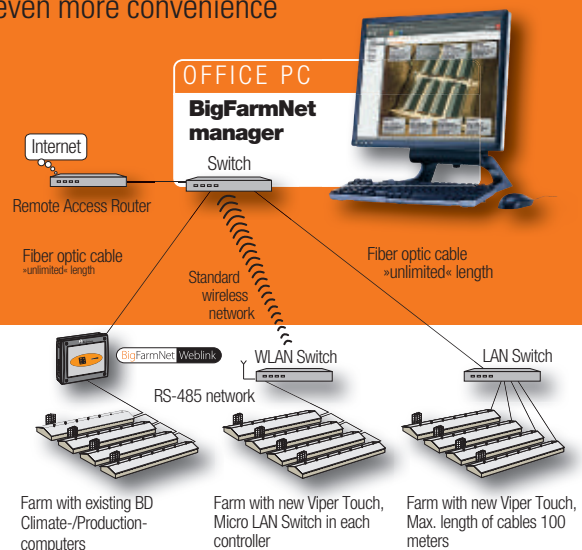
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EDITOR'S COMMENT *by Mark Clements*



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[www.WATTAgNet.com/
MarkClements.html](http://www.WATTAgNet.com/MarkClements.html)

The growing problem of poultry litter

It's a problem that the poultry industry cannot escape from and is unlikely to go away on its own. What to do with poultry litter!

As the industry has grown, so has the volume of litter being produced and, once a problem reaches a certain size, costs start growing too.

What to do with litter is under scrutiny around the world, and solutions are being sought in a variety of ways. Using it as manure, or burning it, may not be the best options. We will return to the topic of litter later this year, but I thought it might be worth looking at a couple of initiatives in Northern Ireland to see if they might spark the imagination in some way or another or offer potential solutions that can be applied in other parts of the world.

Northern Ireland's broiler industry produces some 260,000 metric tons of litter each year, and it is forecast that this could rise to 400,000 metric tons within five to 10 years. Traditionally, the local poultry industry has relied on spreading its litter on agricultural land as the primary method for management, but this is no longer sustainable.

And so Invest in Northern Ireland, on behalf of the Northern Ireland Department of Agriculture and Rural Development, and the Northern Ireland Department of Enterprise Trade and Investment are using a Small Business Research Initiative competition to stimulate the development of sustainable and innovative solutions for the use or treatment of litter. This may all sound a bit of a mouthful, but in practice they are looking to find a simple solution to a problem with an

increasing impact.

The competition criteria will consider the appropriateness of any technical approach, how sustainability and environmental challenges will be addressed, the degree of innovation, and how this is balanced against project risk and timescales, the technical and commercial viability of the proposal, and the appropriateness of the project management arrangements and financial proposals. Applications must be made by February 20, with contracts being awarded in May this year.

The competition comes on the heels of a review of poultry litter management options and a discussion of anaerobic technology options.

Finding a solution to the issues posed by the production of poultry litter is seen as key to the development of the industry in the province, and its volume is currently acting as constraint to expansion.

« *Once a problem reaches a certain size, costs start growing too.* »

This is something that, sooner or later, is likely to be repeated in most markets if it is not happening already, particularly as environmental standards and controls become tighter. Like anything, forewarned is forearmed. It is usually better to address a problem yourself in your own time, and at your own speed, rather than waiting for someone to tell you what to do and following their schedule. So it is probably worth keeping a close eye on developments in Northern Ireland, and should you have any suggestions, drop the Department of Agriculture a line. □



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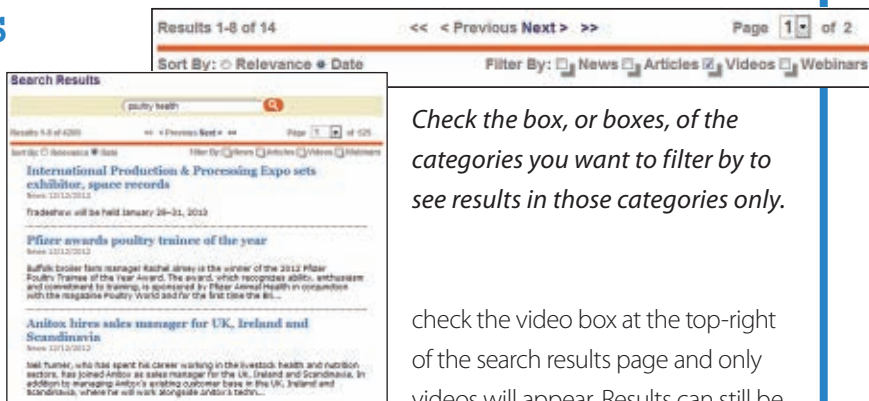


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NEWS YOU CAN USE

Robust WATTAgNet search function offers new filtering options

The www.WATTAgNet.com search functionality has been updated to better categorize and sort search results for users. This robust search function now allows users to filter results by categories (news, articles, videos or webinars). This helps you quickly locate the type of content you are looking for by simply clicking on the check box next to the category of interest. For example, if you are specifically looking for poultry health related videos,



Check the box, or boxes, of the categories you want to filter by to see results in those categories only.

check the video box at the top-right of the search results page and only videos will appear. Results can still be sorted by date published or relevancy, as well. We hope you enjoy using the updated www.WATTAgNet.com search functionality to find, sort and filter what you need quickly and efficiently.



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VIV Asia to offer additional learning opportunities in poultry, pig nutrition

VIV Asia is fast approaching, and the industry's focus will soon be turning once again to Bangkok, Thailand.



developments in the sector and increase their knowledge.

The organizers of VIV Asia note that investments in technology and equipment for the milling, processing, storage and handling of raw materials to produce feed are continuing strongly in the region, in part because of a growing population and demand for meat, but also because there is growing awareness of the importance of food safety.

The region's consumers want more meat and safer meat. The volume of chicken meat produced in Asia over the next decade, for example, is expected to increase by 42 percent, accounting for 45 percent of the poultry industry's growth worldwide over the period. And along with this will go an increase in demand for feed and the need to work with that feed more efficiently.

The event's organizers say the global market leaders in the feed sector have confirmed their presence and that many have booked significantly larger booths. Consequently, the space allocated to CropTech-FeedTech at the Bangkok International Trade and Exhibition Center has been extended. Some 5,000 visitors dedicated to the sector are expected to attend the event, looking to discover the latest

Ongoing education

In addition to being a hub of commercial activity, VIV Asia is an increasingly important point of learning. Various educational events are planned this year, covering production aspects starting with feed and going right through to meat.

Among these education programs will be two days of lectures under the CropTech-FeedTech banner. Day one will cover digital engineering in the feed industry, while day two will look at the future use of enzymes in poultry feed and the use of immunoglobulins in piglet feed.

Aimed at feed professionals, the second day's presentations will be from DSM's Christos Antipatis and EW Nutrition's Thomas Heile and will be moderated by Ken Jennison, editor of *Feed International* from co-sponsor WATT. □

Fast facts

- What:** VIV Asia 2013
- Where:** Bangkok International Trade & Exhibition Centre, Thailand
- When:** Wednesday, March 13: 10 a.m. to 6 p.m.
Thursday, March 14: 10 a.m. to 6 p.m.
Friday, March 15: 10 a.m. to 4 p.m.
- For more info:** www.vivasia.nl/en



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by Mark Clements

Difficult times persist for global poultry producers, but long-term outlook positive

Few positives are expected for the industry during the first months of this year, but better times are on the horizon.

The first few months of 2013 are expected to offer little cheer for the poultry industry, but as the year progresses, the situation should improve. Long-term, the future looks bright, but producers are continuing to struggle with high

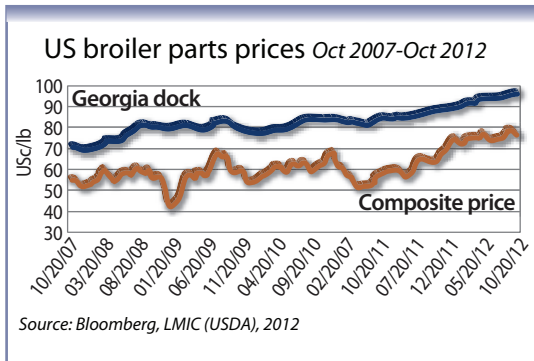
input costs, weak demand, and slim or even negative margins.

Feed prices continue to be central to the industry's problems, and producers have had difficulties in passing them on. Droughts in the U.S., South America and Russia have all negatively impacted production. In a report published late last year, Rabobank forecasts that food prices as a whole may reach an all-time high in the first quarter of this year and continue to rise through the third quarter. Moreover, across all foodstuffs, it is the inputs for animal feed where the greatest inflation is occurring.

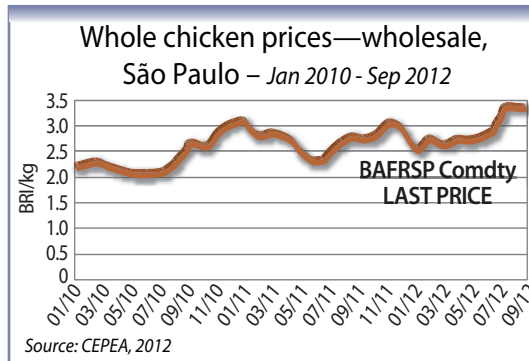
It estimates that world corn (soybean) stocks have fallen to 51 days of use. Falling stock levels will continue to push up prices for animal feed and consequently the cost of meat and dairy products. Much will depend on the quality of 2013's harvests. While there can be no guarantee, they are unlikely to be worse than those of last year.

The one advantage poultry producers have when feed prices are high is that when compared with producers of other animal proteins, the poultry industry at least can adjust more

Read: Will 2013 be luckier for the poultry industry?
www.WATTAgNet.com/155754.html



Cutbacks in production in the U.S. are helping to push up prices for cuts and offset feed prices.



Whole chicken prices in Brazil have been rising, but this has forced some consumers out of the market.

quickly due to short animal life cycles. However, this is small comfort for those hit by rising input costs. Producers in the EU, the U.S., Thailand, India and South Africa are thought to currently be experiencing particular difficulty.

Economic outlook

The global economy remains weak. The European economy is stagnant, but other regions of the world where economies have held up are seeing their economic performance slow. While still growing, Brazil, Russia, India and China are no longer recording the growth rates or enjoying the export success that they once did. The home market has become more difficult for Brazilian poultry meat producers, while demand is also down from key importing markets such as Hong Kong, Saudi Arabia and Japan, and this is feeding through to their suppliers, such as Brazil and the EU.

According to Nan-Dirk Mulder of Rabobank, the first quarter of 2013 is likely to be challenging as higher feed input costs move through flocks. Beyond that, he argues that returns will depend on industry discipline in keeping production sufficiently moderated to raise prices and offset increasing costs. Weak global demand, he says, is urging industry players to rationalize their supply base, and non-strategic vehicles are being divested.

Cut backs and expansion

The U.S. has already started making supply cuts, and prices have been rising at retail level there. Additionally, the U.S. is witnessing growing demand for dark meat and for leg exports. Yet, if one looks to Thailand, rapid industry expansion and the loss of export markets have resulted in significant oversupply on the home market. While Thailand may now be re-entering export markets, other players filled the gap left by the country. Brazil's producers are facing difficulties on the home market, and less efficient plants are being made idle or sold as the local population is less able to afford poultry meat.

There are, nevertheless, ongoing expansion projects around the world, for example in Saudi Arabia, Russia and of course in China. But developing markets are those where consumers are most sensitive to price increases, and the Middle East, Asia and North Africa are those regions of the world most sensitive to any increases in food price inflation. In a global economy, the impact of higher input prices in one region can quickly have an effect in other regions.

Positive longer view trend

So while the long-term trend in meat consumption is still expected to be positive, current difficulties could result in that upward curve becoming flatter. And it should not be

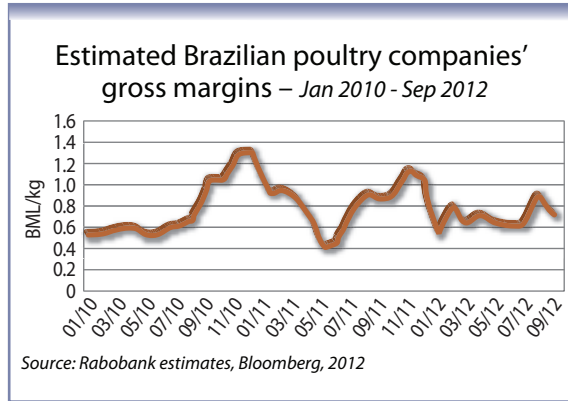


Long-term outlook positive

forgotten that when starting from a larger base, high volume increases do not always translate into high percentage increases.

This slowing in growth has been examined by Paul Aho, of consultancy Poultry Perspective, who notes that future growth rates in chicken meat and egg production will be much lower than those of the last two decades.

He points out that meat and egg consumption stood at some 40 kg in 2002, and this is expected to only increase to 46 kg over the next decade. But the comparison bears a little more examination. While the increase per capita may seem disappointing at first glance, it should be remembered that the population will have increased to 8 billion, from 6 billion in 2002. Not only are people consuming more meat, but more people are consuming it.



Margins in Brazil have been decreasing, putting increasing pressure on smaller producers. However, some improvement is now expected.

Encouragingly, he believes that, over the next five years, feed costs will drop from today's highs, although they will rise again by 2022. Yet, when viewed in the context of all meat production, the poultry production will be less disadvantaged than other sectors, as the difference in feed efficiency between poultry and other meat production over the period is expected to widen.

He also predicts that of all meat types, chicken meat will see

the highest growth rates. This will particularly be the case in Asia and Latin America, but producers in Africa are also expected to fare well.

In comparison to developed markets, most of Asia still enjoys low cost labor and capital, and access to large markets. The local industry will continue to make efficiency gains, and value is given to every part of the chicken.

Although slowing somewhat, Latin America is enjoying strong economic growth along with political stability. The next 10 years could be viewed as "The Latin American Decade." Chicken meat output in the region is expected to grow by 8 percent to reach 30 million tons, seeing the region's share of world production expand from 27 percent to 32 percent.

Success is also forecast for Africa, which should see its share of global production grow from 5 percent to 8 percent.

The first half of 2013 is expected to see little positive change for the sector globally, but the situation is unlikely to deteriorate significantly. Restricting supply may be the only way in the short term to increase profitability; however, in the longer term, demand is still expected to increase, albeit at lower levels than the sector may have become accustomed to. □



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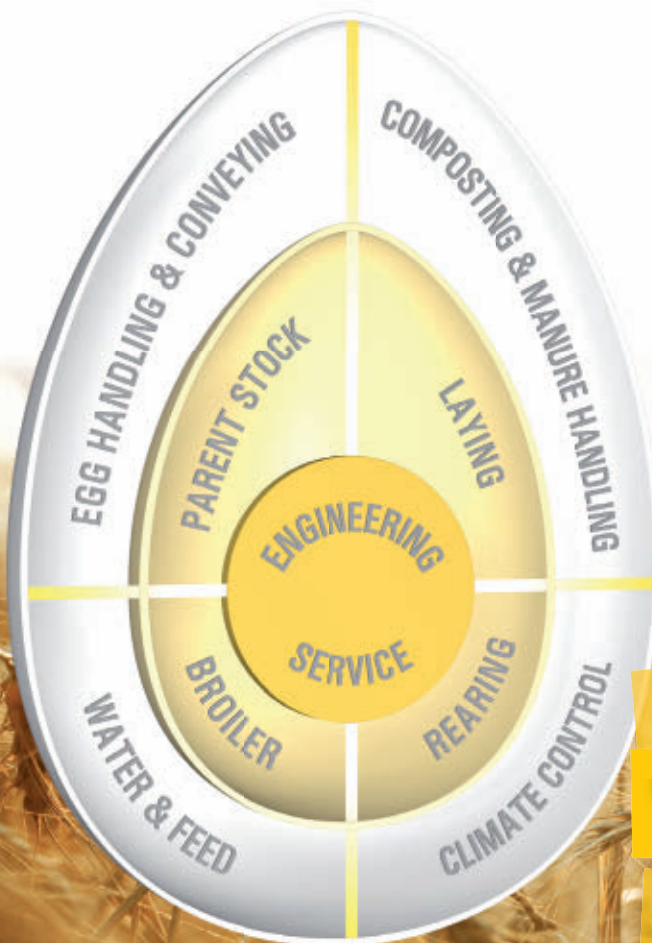


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by Mark Clements

Can developments in disease diagnostics offer greater control for poultry producers?

Faster results and lower costs mean diagnostics could play an increasingly central role in managing flock health and treatment decisions.

The better the information, the better the decision. In an era when poultry producers are living with tight margins and greater restrictions on the use of veterinary medicines, taking the correct course of action has become central to maintaining profitability. Knowing with certainty what is happening in the flock, rather than relying on a degree of guesswork, can give producers an advantage that was not easily available in the past.

And this is where modern diagnostic technologies can play a part. The benefits that advances in diagnostics can bring to food animal producers was among the topics of a meeting in Brussels late last year entitled "Advances in Diagnostics," sponsored by Life Technologies Animal Health.

Speaking at the event, Dr. Willie Loeffen, president of the European Association of Veterinary Laboratory Diagnosticians, said: "Technological developments mean that diagnosticians can now do things that they could only dream about 10 years ago. Laboratory diagnosis used to be 99 percent labor and 1 percent technology; nowadays, the emphasis is the other way around. Technology is now an integral and indispensable part of veterinary laboratories."

President of the European Association of Veterinary Laboratory Diagnosticians, Dr. Willie Loeffen, noted that diagnosticians can now things that they could only dream about a decade ago.



Additional tool

Kirk Adams, director of product management, Life Technologies, noted that veterinarians have always used all of their senses to make a diagnosis. On going into a broiler house, he noted, you check the litter, and a veterinarian will always do this, but more tools are available to make a diagnosis. "Now, we can look at almost any pathogen, and this will revolutionize the way that animals are reared," he said.

Many diseases have the same clinical signs, so there is always the risk that treatment decisions are based on the belief that one causative agent is present when, in fact, a flock is infected with another. Relying on the senses may often work, but with rapid and accurate diagnostic tools, a poultry veterinarian can be sure of a correct diagnosis and, with proper interpretation of results, recommend the correct treatment.

Adams added: "Diagnostics are no longer just a

Read: New diagnostics detect, treat pig diseases in hours

www.WATTAgNet.com/155989.html

A reduction in the use of broad-spectrum antibiotics could be one of the benefits derived from improved diagnostics, believes Dr. Kirk Adams, of Life Technologies.



way of finding out what an animal died of; they have a multitude of uses on farm. They mean that we can take a more holistic and proactive approach to animal health; in contrast to the reactive, disease driven approach of the past.

“As just one example, better diagnostics allow a more targeted approach to treatment and the potential to reduce the use of broad-spectrum drugs, such as certain antibiotics, and thus comply with the wishes of consumers and legislators.”

Greater use of diagnostics in flock or herd health could result in better vaccination programs and improve biosecurity, as well as helping in disease eradication schemes and improving disease status by identifying persistent infection and asymptomatic birds or animals. They also allow veterinarians to monitor flock health, which aids in building up an accurate and dynamic picture of health status and risk profile, as well as screening for emerging diseases.

Adams continued: “The next 20 years could see the biggest change in the way we manage production animals in over a hundred years.”

Greater security

While employing diagnostics on the farm may offer more predictable performance and productivity, there has been the issue of the time

taken to receive results and cost of diagnosis. Yet these issues have changed dramatically over recent years and continue to change.

Illustrating this change, Loeffen pointed to the human genome project, and how its completion took 12 years at a cost of US\$3 billion. The same results could be obtained now in under two hours and at a cost of US\$1,000.

Accurate diagnosis not only allows you to know which treatments or vaccinations should be chosen, but knowing a flock's health status also gives greater

insight into who can and cannot be allowed on farm. Developments in molecular technology mean that it is possible to understand disease and health at a deeper level than ever before at the gene level, and that will have a major impact on the way that animal health and welfare are approached.

“The next 20 years could see the biggest change in the way we manage production animals in over a hundred years.”

Adams continued: “In the future, we will be able to use gene sequencing to determine the sensitivity of individual animals to specific treatments. Molecular tests, such as polymerase chain reaction, also facilitate disease eradication programs, more strategic use of vaccination, more effective biosecurity measures and the management of diseases for which there is no effective treatment by allowing the identification of asymptomatic, persistently infected animals. There are many ways in which this technology can and will be applied to improve the health and productivity of food animals.” □

by Walid Q. Alali, Michael P. Doyle, Nelson Cox and Isabel Walls

Salmonella prevalence in poultry varies greatly in emerging markets

Salmonella on raw chicken meat at the retail level varied greatly among emerging poultry market countries in this analysis.

Globalization of the food supply can impact food safety from both a public health and international trade perspective, but insufficient data exist to develop internationally recognized standards. The presence of *Salmonella* on poultry is an important factor in protecting public health and facilitating trade.

The Codex Alimentarius Commission was established by the Food and Agriculture Organization and the World Health Organization in 1963 to develop harmonized international food standards, guidelines and codes of practice to protect the health of the consumers and ensure fair trade practices in the food trade. Codex Alimentarius standards are established based on risk analysis of scientific food safety data that are available internationally.

The development of internationally recognized food safety standards for poultry will require the collection of data. For example, there are limited data on *Salmonella* on raw chicken meat. Data obtained from equivalent testing methods on the occurrence of *Salmonella* on raw chicken are not available for many countries, which limits the ability



for Codex Alimentarius to set standards that are representative for poultry production worldwide.

Lack of internationally agreed upon standards can impact the ability of countries to develop science-based standards, which may have a negative impact on trade. Some countries have established a zero-tolerance policy for *Salmonella* in raw poultry, which is an unrealistic standard in most parts of the world.

Data collection in emerging poultry production markets

The authors conducted a series of studies to determine the prevalence (i.e., frequency) of *Salmonella* on raw chicken meat at retail establishments in four countries (China, Colombia, Russia and Vietnam) that currently have a *Salmonella* zero-tolerance policy on raw chicken. The goals of the project were as follows:

- * Provide capacity building in these countries on how to build a surveillance system for *Salmonella* on raw poultry
- * Increase the knowledge of the baseline levels of *Salmonella* in raw poultry in these countries
- * Provide data that could be used by World Health Organization and Food and Agriculture



Chicken in supermarket in Vietnam

Organization in international risk assessments

- * Develop internationally recognized standards for *Salmonella* on raw chicken meat

The long-term goals were to protect the global food supply from contaminants, facilitate fair trade practices and enhance food safety data collection and risk assessment at the local level.

Frequency of Salmonella on raw poultry in retail establishments

In China, Colombia, Russia and Vietnam, approximately 1,000 whole chicken carcasses (locally produced, not imported) were collected from different types of retail markets (hypermarkets, supermarkets, mini-markets and open/wet markets) over a wide geographical region. Using a statistically based sampling plan, the number of samples was determined based on percentage of chicken consumed (correlated with population size) in each country. Subsequently, a stratified sampling strategy was applied in which province and city, district, and store type were the primary, secondary, and tertiary units, respectively.

Frozen chicken was generally less frequently contaminated with *Salmonella* compared to chicken stored at chilled (4C to 8C) or ambient (greater than 15C) temperatures.

The overall *Salmonella* prevalence for each country is presented in Table 1. The prevalence by retail market varied greatly in each country, which may be attributed to the contamination at various points in the supply chain, from live chickens on the farm to the storage conditions (chilled, ambient or frozen) at the retail market. The full publications

Table 1: Prevalence of Salmonella on raw chicken meat from retail establishments by country

Country	Number of samples collected	% of Salmonella positive samples
China	1,152	52.2
Colombia	1,003	27.0
Russia	678	31.5
Vietnam	1,000	45.9

Salmonella prevalence by retail market varied greatly by country, which may be attributed to the contamination at various points in the supply chain, from live chickens on the farm to the storage conditions at the retail market.

for the China, Colombia, Russia and Vietnam studies are available in the *Journal of Food Protection: JFP* 74: 1724–1728 (2011); 75: 1134–1138 (2012); 75: 1469–1473 (2012); and 75: 1851–1854 (2012).

All samples were tested for the presence of *Salmonella* using a whole chicken rinse method recommended by the United States Department of Agriculture Food Safety and Inspection Service.

To compare these findings with results from other studies, one must consider the differences in study design, number of samples assayed, microbiological analytical unit (whole chicken versus chicken parts), *Salmonella* isolation methodology, retail store type storage conditions, and food safety practices of poultry production and processing facilities.

Prevalence of Salmonella on poultry in retail establishments

Taking these factors into consideration, the prevalence of *Salmonella* at retail establishments in countries that have implemented *Salmonella* control programs at the production and processing levels was as follows:

- * 4 percent (n= 877) in the United Kingdom
- * 3 percent (n = 232) in New Zealand
- * 4.2 percent (n = 212) in the United States
- * Zero (n = 40) in Sweden



Salmonella prevalence

Open market in Russia where poultry is sold



also serotyping *Salmonella* isolates from chicken carcasses and determining their antimicrobial susceptibility profiles.

What do these data tell us?

Salmonella is frequently found on raw poultry, but interventions can be used to reduce the prevalence at a low frequency. Reducing the levels of *Salmonella* on raw poultry should lead to a reduction in salmonellosis. A zero-tolerance policy on raw chicken meat is an unrealistic goal under the current poultry production and processing systems, but countries should strive to reduce the levels as far as possible.

Data developed in these studies can be useful for the development of common international standards for *Salmonella* on raw poultry by the Codex Alimentarius Commission. Such information may also be helpful for national governments and industry to identify intervention opportunities as well as control points in poultry production and processing in the surveyed countries to reduce *Salmonella* contamination at the retail level. □

References: Codex Alimentarius Commission (CAC), 2007. Principles and guidelines for the conduct of microbiological risk management (MRM), CAC/GL 63-2007 WTO 2012; http://www.wto.org/english/tratop_e/sps_e/spsagr_e.htm

► Walid Q. Alali and Michael P. Doyle are with the Center for Food Safety, University of Georgia, Griffin, Ga. Nelson Cox is with the USDA Agriculture Research Service, Russell Research Center, Athens, Ga. Isabel Walls is with the USDA National Institute of Food and Agriculture, Washington, D.C.

« A zero-tolerance policy on raw chicken meat is an unrealistic goal under the current poultry production and processing systems, but countries should strive to reduce the levels as far as possible. »

Alternatively, *Salmonella* prevalence on raw poultry in countries with limited *Salmonella* controls in their poultry production and processing practices was as follows:

- * 60 percent (n = 60) in Portugal
- * 36 percent (n = 772) in Belgium
- * 35.8 percent (n = 198) in Spain
- * 57 percent (n = 72) in Thailand

The authors are currently collecting enumeration data on the levels of *Salmonella* on raw poultry in these countries. Quantitative data will enhance our understanding of the risk of acquiring salmonellosis through consumer exposure to raw chicken meat and determine what could be an appropriate quantity of *Salmonella* on chicken carcasses that would pose a minimal risk to human health. We are

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by Ioannis Mavromichalis, Ph.D.

Are broiler feed prestarters worth the cost?

A fortified prestarter formula enhances early broiler growth. The challenge, however, is how to balance the value of increased growth with the increased feed cost.

Young broilers experience unrealized growth potential during the first week post-hatch when fed conventional cereal-soy diets. The use of fortified prestarter diets to enhance early broiler growth is a controversial topic among nutritionists mainly because of feed costs. These formulas can double the cost of a conventional broiler diet, but its impact on growth rate is rarely questioned.

Energy, amino acids

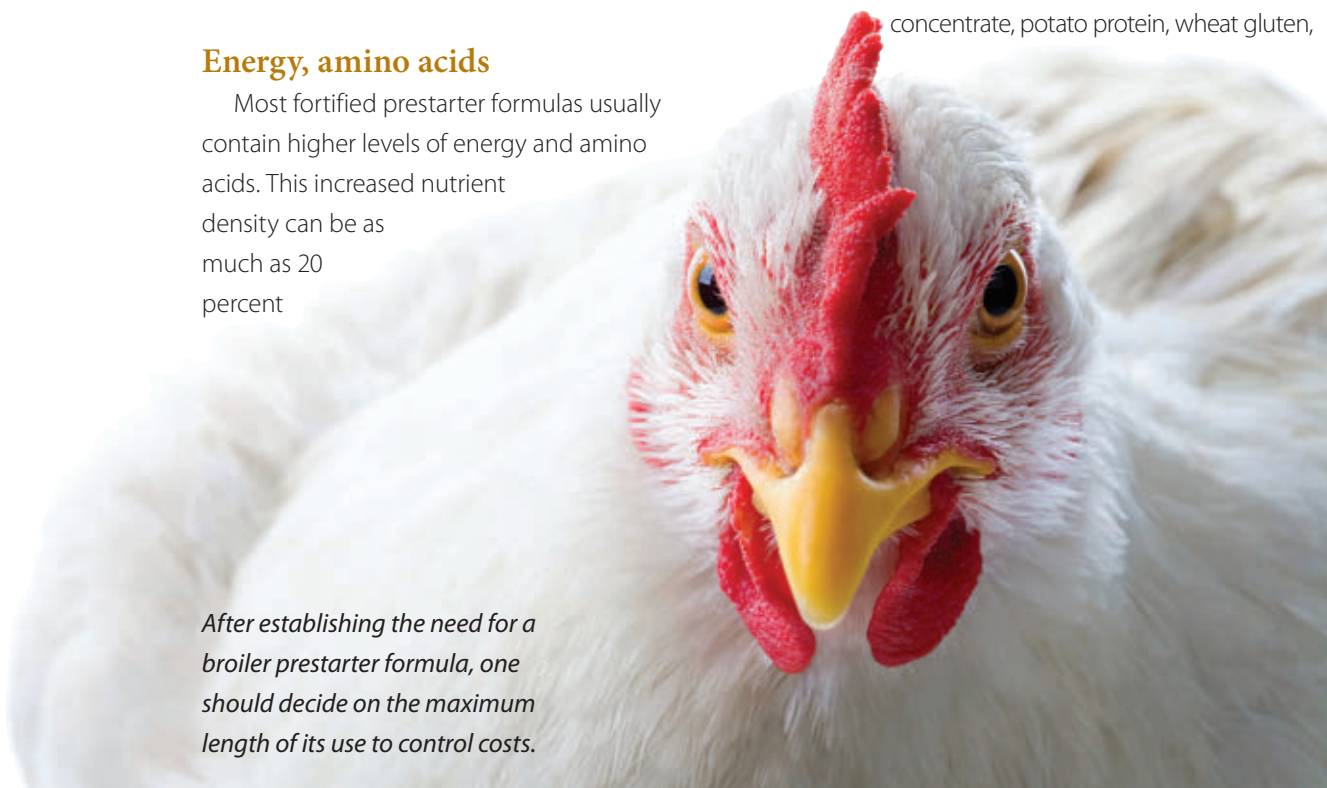
Most fortified prestarter formulas usually contain higher levels of energy and amino acids. This increased nutrient density can be as much as 20 percent

compared to normal levels, but in most cases it does not exceed 10 percent. In fact, it has been estimated that nutrient digestibility in young broilers is no more than 10 percent less than in older broilers. The only issue with this approach is that unless crystalline amino acids are used, total dietary protein levels must be rather high, with well-known adverse effects on animal health and environmental sustainability.

Highly digestible ingredients

Another approach is adding highly digestible ingredients, as is the case with very young piglets. Such ingredients include animal plasma, hemoglobin, low-temperature fishmeal, soy protein concentrate, potato protein, wheat gluten,

After establishing the need for a broiler prestarter formula, one should decide on the maximum length of its use to control costs.



Dmitriy Shironosov/Dreamstime.com

dextrose, rice, starch and decorticated oats. By adding these ingredients to feed, nutrient digestibility is naturally high, ensuring an increased level of nutrient uptake without having to rely on high-density diets. When using fortified prestarters, the use of lactose and other dairy products such as sweet whey at very low inclusion levels also is incorporated with positive results.

Enzymes

Enzymes that increase energy and protein digestibility are another way to enhance early broiler growth. However, current enzyme products cannot fully cover the required increase in nutrient density. Enzymes can be of value in diminishing the effect of anti-nutritional factors found in many cereals, such as wheat and barley. After establishing the need for a super broiler prestarter formula, it is important to decide on the maximal length of its use to control costs. In most cases, feeding a special prestarter is

rarely practiced beyond the first week post-hatch. The higher the quality of the special prestarter, the shorter the duration of the feeding period required.

Long-term effects

The final question is that of long-term effects from feeding broilers expensive diets. In one controlled study, a highly digestible diet was offered for the first four days post-hatch and chick growth was enhanced by almost 35 percent. At market age (42 days), broilers fed a conventional diet during the first four days were about 10 percent lighter than broilers that had been on a super prestarter formula. Apparently, given the very short growing period, broilers fed the conventional diet were not able to compensate for lost growth potential during their first week of life. As a result, it must be calculated that this extra weight at market age is valued higher than the cost of feeding the super prestarter formula. □



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by Ioannis Mavromichalis

Re-evaluating soybean products in

Feed quality in terms of anti-nutritional factors is best determined by the level of

A recent study evaluated the effects of varying levels of trypsin inhibitor activity in broiler feed ranging from 1.4 to 6.4 TIA units/mg, using soybean meal and extruded soybeans of different TIA concentrations.

The National Institute of Agricultural Research in Argentina found that feed containing 2.4 TIA units/mg, did not affect broiler performance. However, levels above 3.4 units/mg were found to negatively impact broiler growth performance in a significant way.

TIA and broiler weight

Broilers fed TIA levels of 3.4 and 4.4 units/mg had intermediate final weights about 3 percent less than birds fed very low levels of TIA. Birds fed 5.4 and 6.4 units/mg had the lowest weight at 49 days of age (about 6-9 percent less than birds fed

low-TIA diets).

Feed utilization efficiency was negatively affected only at the highest levels of TIA concentrations (about 6 percent worse than low-TIA treatments). It was estimated that broilers fed the highest level of TIA would require at least three extra days to reach the same final weight as birds fed the lowest levels of TIA.

The effects on body weight and feed efficiency parameters were in accordance with pancreas size, which was found to be enlarged in broilers fed diets rich in TIA levels. TIA refers to the inhibition of natural proteolytic enzymes, which causes the organism to secrete higher quantities of such enzymes to make up for their reduced efficacy.

If TIA intake levels are high, this compensation mechanism is not adequate and growth performance is lost. Based on these results, it can

Photo by Andrea Gantz

broiler feed

trypsin inhibitor activity

be possible to use TIA concentrations in soybean products as a nutrient specification parameter during feed formulation. If TIA levels are known, then the concentration of soybean products can be adjusted to prevent performance losses.

Soybeans in broiler feed

Alternatively, if soybean product levels in broiler feed are inflexible (such as in the case of simple maize-soybean meal diets), then soybean processing can be fine-tuned at the production site to minimize TIA levels. The extra cost to reduce TIA levels in soybean meal (or extruded soybean products) should always be less than the current profit loss.

Anti-nutritional factors are present in soybeans, but their presence is largely ignored as they are assumed to be destroyed by heat treatment

during the oil solvent extraction process (soybean meal) or extrusion (full-fat soybeans or extruded-exPELLER soybean meal). Unfortunately, some residual anti-nutritional factors cannot be avoided as total elimination would require the protein to be overheated and thus denatured, which would reduce the nutritive value of protein.

Currently, quality in terms of anti-nutritional factors is best determined by the level of TIA, with residual levels ranging from as low as 2-3 units/mg or as high as 20-30 units/mg. Unfortunately, such information is rarely available, especially in the case of standard soybean meal, and although young non-ruminant animals find it difficult to handle soybean anti-nutritional factors, this aspect has never been quantified with sufficient detail, at least in the case of broilers. □

Source: Iglesias and Azcona (2012) Albéitar 159:34-36.

Three key areas for yield maximization in poultry processing

The holding shed and hanging area, the kill and bleed area, and the scalding and picking process can be tweaked to increase yield.

In all processing plants, the most important driver for reducing cost is yield. Maximizing yield and yield value is the difference between average and outstanding returns and, in some cases, making a profit or losing money.

Product costs are driven by dollars and volume. Increased yield will drive down the costs of salable product and increase volume without additional raw material cost, labor expense or overhead cost. From a plant standpoint, yield is the most important number that affects the bottom line.

If conducted properly, the procedures outlined in this article will increase product yield.

It is important to remember that a great plant yield will always start with a good live product from the farm. Most of the costs of the salable product are already in the birds at this point. The plant's responsibility is to convert the potential of the live bird into high quality products at the lowest possible cost.

Poultry plants today span a wide range of automation levels, yet regardless of the level of automation and product mix, there are three basic process steps that are common with all operations:

- * Holding shed/hanging area
- * Kill/bleed area
- * Scald/pick process

Read: Successful processing needs teamwork across farm and plant
www.WATTAgNet.com/155720.html



Time spent in holding sheds should be kept to a minimum. Good shed design can help to minimize stress and promote welfare.

1 Holding shed and hanging area

Minimizing holding times and providing proper holding areas for live birds waiting to be slaughtered are necessary for welfare and to reduce thermal stress. Holding times should be part of a comprehensive plan that considers feed and water withdrawal, catch and transport times. The best results are those that have the shortest holding time, usually two hours or less.

Trials have shown that 40 percent of all dead-on-arrivals are from thermal stress, including the time of transport and the holding time at the plant. This number should be 0.25 percent or less.

Live shrink is the amount of body weight that live birds will lose from the time they arrive at the

plant until they are processed. In many companies, the live shrink number is measured on every load. Trial measurements should be run on individual loads to establish benchmark values of holding time, temperature and the amount of loss. This number will be a good management tool to help develop an effective program in each situation. In an operation with proper logistics, the shrink loss should be under 0.5 percent.

The majority of the poultry processing industry uses one of two main types of holding concepts:

The lairage-type holding areas maintain a controlled temperature and good ventilation, and uses restrictive lighting, which helps to keep the birds calm.

The holding shed concept can also provide excellent results. A well-designed shed has high-speed fans located to blow through the coops or cages to remove heat. These fans should be turned on once the temperature reaches 24C (75F). The shed will also need a water atomizer system for use when temperatures reach 27C (80F). Remember, the goal of this area is to keep the birds comfortable.

Unloading and hanging

The unloading and hanging operation not only dictates the efficiency of the kill operation but, if not done properly, will cause problems and yield loss throughout the operation.

It is critical to have a consistent supply of birds to the hanging area to keep the line full. Empty shackles on the kill line could result in empty shackles in the evisceration line, causing more misfeeds and difficulty setting the timing on all the automated equipment.

If using a coop system, care must be taken to load the conveyor without dropping or throwing the coops, which causes bruising. With the cage and dumping systems, the belts should be set at speeds to keep a steady supply of birds without dumping birds on top of each other or causing piling up and smothering at the end of the hanging belt.

A proper hanging area is darkened and not illuminated with ultraviolet light to keep the birds calm. The shackles must be at the right height and

distance in relation to the belt and hanger personnel. It is also very important to have the right gauge of the shackle loops to best match the bird size you are running to prevent damage to the feet.

Another aspect is the training of the personnel who hang the birds. This must include the proper way to hold and handle the birds to help prevent drum bruises and disjointed thighs.

A breast rub prevents the birds from climbing the back of the shackles and flapping their wings, causing bruises and red wings. Another breast rub should start at the end of the hanging area and continue all the way to the stunner.



Breast comforters can prevent birds from injuring themselves.

2 Killing and bleeding

The kill and bleed step, in some form, is also common to all operations. The aim is to slaughter the bird in a humane manner and remove the blood from the carcass. Achieving this without damage or downgrade to the bird is the challenge.

The most common kill process used worldwide is the system using electrical stunning and an automatic kill machine. When using the electrical stunner process there are two options that are widely employed.

The U.S. model uses lower voltage and frequency to produce 20 to 40 milliamps per bird. This has proven to be animal welfare friendly and does minimal damage and downgrade to the birds when operated properly.

The second model uses a non-recoverable stun



Three key areas

approach that produces a much higher milliamp per bird—100 at present. This system is very effective from an animal welfare standpoint. However, the increase in voltage has increased the amount of damage to the bird. The animal welfare aspects of both systems are deemed acceptable.

The other stunning option that is available is controlled atmosphere stunning. This includes both chemical types that replace oxygen and systems that remove the oxygen from the birds by mechanical means. The controlled atmosphere stunning systems all do a non-recoverable stun and achieve a uniform stun of all birds in a flock regardless of size. The system provides a much better environment and ergonomic work situation for the live hangers.

The controlled atmosphere stunning systems also have some big disadvantages, however, including




identification of dead-on-arrivals and an increase in wing damage.

After birds are stunned, the type of kill cut used should dictate bleed time. Not enough bleed time will result in birds possibly entering the scalders alive and excess blood left in the product with a resultant reddish color to the skin. Too much time will result in feathers being harder to remove and yield loss.

A good rule of thumb is that a cut that severs both carotid arteries and both jugular veins as well as the windpipe will bleed out in 90 seconds. A cut to the side of the neck or back of the head severing only one vein and one artery will require 120-150 seconds to bleed out properly. Before entering the scalders, the birds should have their wings and neck relaxed and there should be no bird movement.

If this is not the case, the bleed time will be too short. If these bird conditions exist much earlier in the blood tunnel before the birds reach the scalders,



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Three key areas

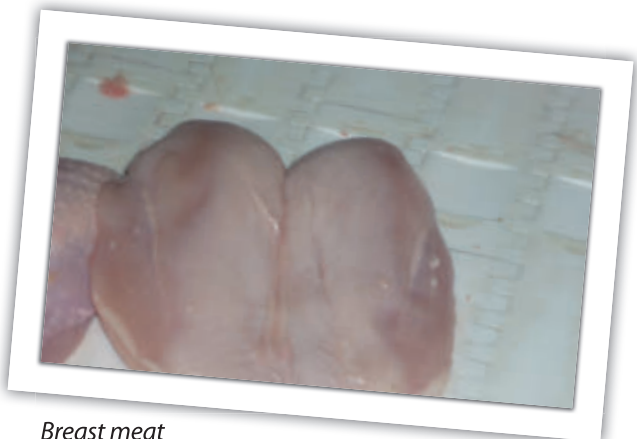
the bleed time is too long causing picking, or feather plucking, issues and yield loss.

3 Scalding and picking

The next area common to all operations is scalding and picking. This is truly an area of the plant operation where success or failure is measured by small increments and with exacting detail. A half-degree difference in scald temperature can mean a huge yield loss or gain.

The scalding must maintain good agitation to wet the feathers completely. If the scalding temperature is set too hot—to ensure 100 percent feather removal—it will result in overscald and partial cooking with discoloration of the breast meat.

Adjustment of the pickers at every flock change has to be done properly to allow correct picker



Breast meat shows signs of being over-scalded.

set-up. There must be enough picking power and the proper picking finger selection for the product mix of the batch. A key consideration is that the pickers cannot be adjusted to pick 100 percent of the feathers, but must be set to the largest birds in the flock being run. Because of this, a small percentage of the birds will have a feather or two left on them. These feathers must be removed manually further

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down-stream in the process.

Scalding and picking systems should be selected based on the processing plant's product requirements. In plants that are producing a soft scald, retaining cuticle on the product is more successful with longer scald dwell times; up to three minutes at lower scald temperatures; usually between 49C and 53C. This system also needs more pickers on line to target specific areas of the bird. In some cases it is also necessary to use a hock steamer to remove the yellow from the hock.

Plants that are producing white, cuticle-off birds will usually use two or three-stage multi pass scalders and have less dwell time. They must scald around 51C-55C to denature the cuticle for removal in the pickers. Dwell time in this type of system needs to be 120 seconds.

There are still a lot of single-stage, multipass systems in use and many are doing a good job. A lot are running shorter dwell times—as low as 90

seconds—and temperatures to 56C to break down the cuticle. This type of system must be constantly monitored as it is very sensitive to line speed changes or agitation problems. Any temperature increases at all could cause major yield loss.

There are many systems that run single-stage, very short dwell times and compensate with higher temperatures. Without exception, these plants suffer major yield loss from overscalding the breast. Heat is yield's enemy, so scald with as low an effective temperature as possible to meet expectations.

It is important to remember that these three areas are only the foundation. Not only must they be followed correctly, but all subsequent steps have to be performed well to maximize yield. □

› *David Beavers is a global processing specialist with Cobb Vantrass Inc.*



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NEWS YOU CAN USE

WATT hires Ioannis Mavromichalis as editor of Pig International

Ioannis Mavromichalis, who joined WATT in November 2012 as nutrition editor, has expanded his role by assuming the position of editor of *Pig International*.

Mavromichalis is an author of more than 1,000 articles, journal papers, abstracts, extension reports, newsletters, ghost manuscripts and book chapters. He is the author of a book titled "Applied Nutrition for Young Pigs," and he has been a regular contributor to several internet sites, while holding regular columns in local and international magazines.

Mavromichalis earned his master's degree in 1997 at Kansas State University and his doctorate in 2000 at the University of Illinois. Both degrees were on monogastric nutrition, with emphasis on swine. Following graduation, he worked for Provimi in the U.S. and Europe until 2004 and for Nutral in Spain until 2008.

In 2008, Mavromichalis established an independent consulting and nutrition service based in Spain. His work involves clients at the farm and corporate level, with customers in the European Union, U.S., Argentina, Brazil, China,

Australia, Ukraine, Romania, South Africa, Russia and Taiwan.

"Ioannis has proven to be a great addition to our editorial team as nutrition editor, and I'm sure he will bring a new level of expertise and professionalism to *Pig International*," said Bruce Plantz, director of content at WATT. "This further strengthens our worldwide team and is part of our commitment to investing in top-notch content for our brands."

Mavromichalis replaces Roger Abbott, who has taken other freelance assignments and will no longer serve as editor of *Pig International*. Mavromichalis will continue his duties as nutrition editor for all WATT agribusiness brands, in addition to editing *Pig International*. He is headquartered in Madrid, Spain, and can be reached at imavromichalis@wattnet.net or via phone at +34.676.253.175.



Ioannis Mavromichalis

IN BRIEF

★ **Vitva appoints vice president of sales, marketing:** Vitva, Slovenia, has opened a U.S. office in Kentucky, and has appointed Connie Sandusky as vice president of sales and marketing for North America.

★ **Russia turkey supplier opens new shop:** Russia turkey supplier Eurodon has opened a new store in Rostov-on-Don, supplying its Indolina brand of turkey meat.

★ **Ross discusses global poultry:** Ross Middle East and

Africa Association members gathered together in Berlin to listen to Dr. Santiago Avendano, director of global genetics, who provided a product update on the Ross 308 and a review of Aviagen genetic developments and achievements.



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www.merck-animal-health.com

Petersime Eagle Eye software

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and settings in the hatchery: incubators, room conditions, cooling water temperatures, and parameters related to air handling. Some of the software's main features include custom-made layout, alarm status overview, dynamic zoom, real-time and historical trending, and enhanced bio-security management.

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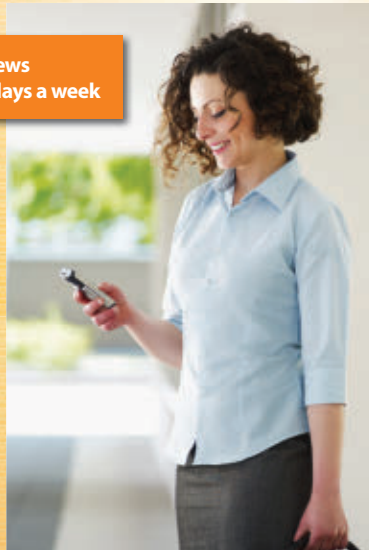
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