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Global chicken meat  
exports to increase  
**3 percent in 2018**



**PLUS**

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# Poultry International

Production, processing and marketing worldwide

## COVER STORY

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**EDITOR'S COMMENT** BY MARK CLEMENTS

## Looking to 2018 and beyond



Total broiler production and international trade in broiler products are both forecast higher this year. While output growth may be below trend, the industry remains in positive territory. It is always harder for mature markets to achieve high growth rates, but 2018 can expect to see a number of mature markets continue to grow and even reach record output.

While some have described 2018's forecasts as stagnant, taking a glass-half-full approach would see the potential for more mouths to be fed, more people employed and rising sales for producers.

Talking of mouths to feed, we bring you the results of the U.S. National Chicken Council's survey of consumption behavior. Consumers in the U.S., it seems, are primarily driven by freshness, taste and prices, but are also influenced by whether birds are raised antibiotic free and are produced locally. Country-of-origin labeling is also an important consideration.

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This issue also takes a trip to the Middle East and Africa. We look at a newly established egg farm in Rwanda that is employing production methods more commonly seen in more developed markets. We also offer an overview of broiler production in Saudi Arabia, along with a preview for upcoming trade show VIV MEA.

**Change ahead**

Continuing a forward-looking theme, how robotic technology is already making its way into the poultry house, not only monitoring production but taking on some of the drudge work that tends to be among the least appealing on-farm tasks, comes under the microscope.

Additionally, we offer a roundup of products that were winners at last year's SPACE Innovation Awards and might be expected to play a growing role in production.

And taking a last step into the future, we also look at how processors can make better use of leg meat. Often undervalued, there are many ways that value can be added, offering opportunities for producers to gain more value from each and every carcass. ■

**CORPORATE HEADQUARTERS**

401 East State St., 3rd Floor  
 Rockford, IL 61104  
 Tel: +1 815 966 5400

**Publisher, International:** Greg Watt  
[gwatt@wattglobal.com](mailto:gwatt@wattglobal.com)

**Executive VP/Publisher  
 Global Petfood and Events:**  
 Steve Akins; [sakins@wattglobal.com](mailto:sakins@wattglobal.com)

**VP/Director of Innovation and  
 Data Development:** Bruce Plantz  
[bplantz@wattglobal.com](mailto:bplantz@wattglobal.com)

**Director of Content:** Terrence O'Keefe  
[tokeefe@wattglobal.com](mailto:tokeefe@wattglobal.com)

**Director of Global Agribusiness Sales**  
 Jeff Miller; [jmiller@wattglobal.com](mailto:jmiller@wattglobal.com)

**EDITORIAL TEAM**

**Editor:** Mark Clements  
[mclements@wattglobal.com](mailto:mclements@wattglobal.com)  
 Tel: +44 7866 475 388

**Digital Content Director:** Tara Loszach

**Senior Editor:** Lisa Kirschner

**Associate Editor:** Ann Reus

**Staff Reporter:** Roy Graber

**Agriculture Reporter:** Austin Alonzo

**Social Media & SEO Editor:** Kathleen McLaughlin

**ART/PRODUCTION TEAM**

**Creative Director:** Joe Cabusao

**Senior Art Director:** Tess Stukenberg

**Production Manager:** Jim Riedl  
[jriedl@wattglobal.com](mailto:jriedl@wattglobal.com)

**Advertising Production Coordinator:**  
 Connie Miller

**SALES TEAM****Northern Europe, Asia, Africa**

Frans Willem van Beemen  
[fvanbeemen@wattglobal.com](mailto:fvanbeemen@wattglobal.com)

Tel: +31 344 653 442; Fax: +31 344 653 261

**Southern Europe, Latin America**

Tineke van Spanje  
[tvanspanje@wattglobal.com](mailto:tvanspanje@wattglobal.com)

Tel: +31 495 526 155; Fax: +31 495 525 126

**Southeast Asia**

Dingding Li, [dingdingli@vip.163.com](mailto:dingdingli@vip.163.com);  
 Tel: +86 137 640 39062

**USA/Canada**

Pam Ballard, [pballard@wattglobal.com](mailto:pballard@wattglobal.com)  
 Tel: +1 815 966 5576; Fax: +1 815 968 0941

Mary Harris, [mharris@wattglobal.com](mailto:mharris@wattglobal.com)  
 Tel: +1 815 980 5938; Fax: +1 847 908 7551

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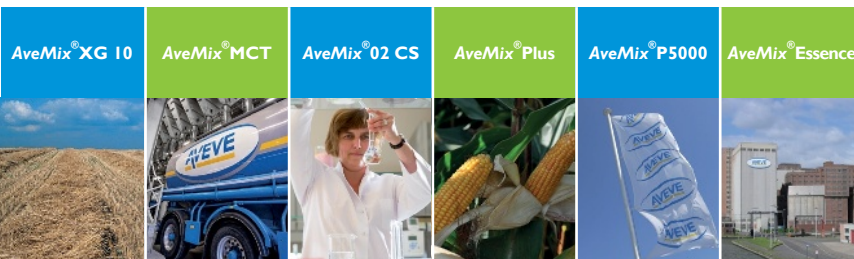
## USDA raises forecast for turkey, egg exports

The U.S. Department of Agriculture has raised its forecast for turkey exports for the remainder of ...

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# Global chicken meat exports to increase 3 percent in 2018

With the exception of China, the world's leading broiler meat exporters can expect to see volumes shipped increase.

MARK CLEMENTS

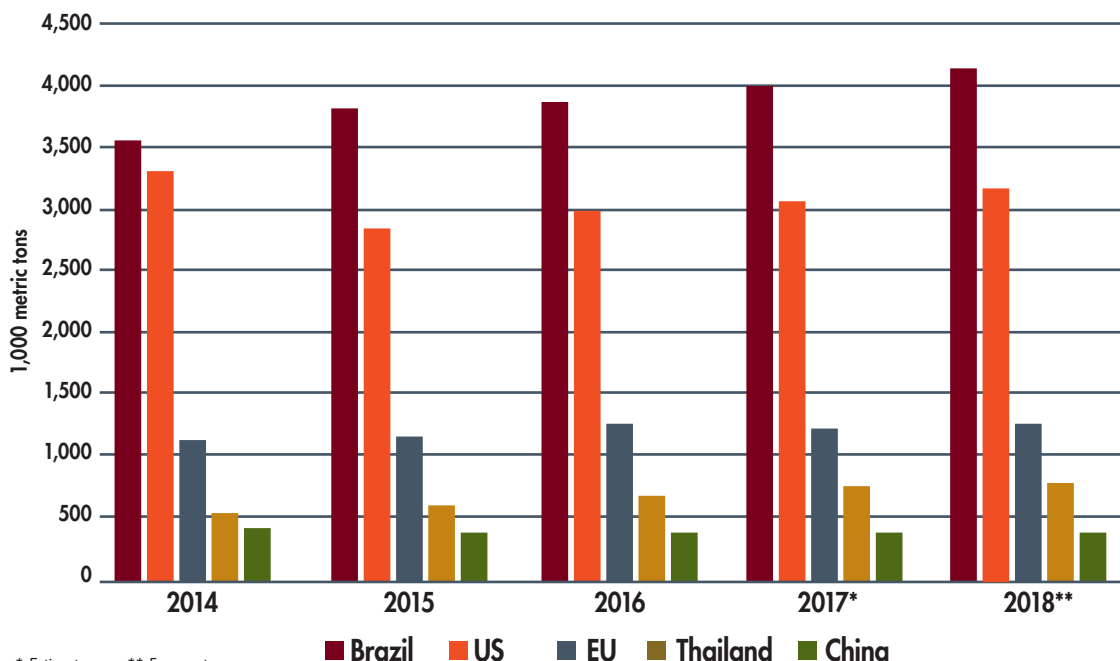
Global trade in chicken meat is expected to increase by 3 percent in 2018 to reach 11.4 million tons, according to forecasts from the U.S. Department of Agriculture (USDA), outstripping the predicted 1 percent rise in total global broiler

production, but growing at a slightly lower rate than in 2017.

Driven by growth in the global economy, which is expected to be stronger than in recent years, and which the World Bank is forecasting

## Poultry meat exports for the world's 5 leading poultry meat exporters 2014-18

(1,000 metric tons, ready-to-cook equivalent)



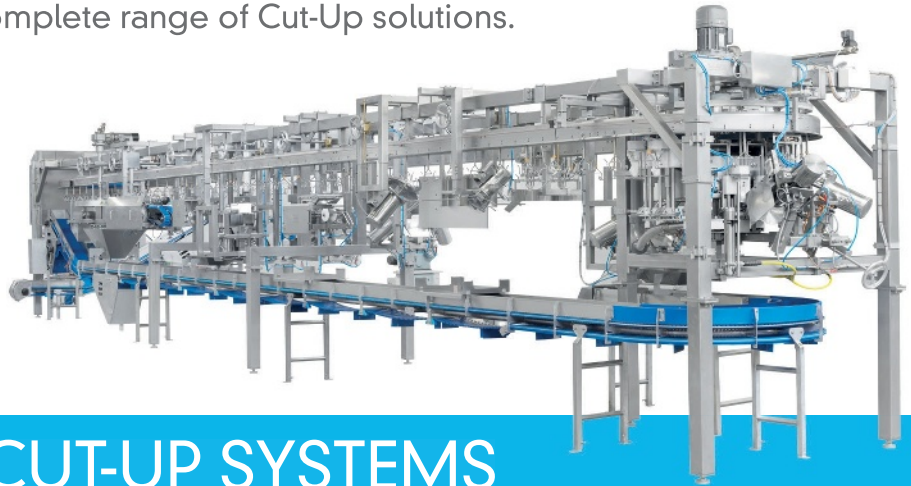
Growth in exports is forecast to be slightly lower in 2018 than in 2017, but of the leading exporters, only China is expected to see shipments decline.



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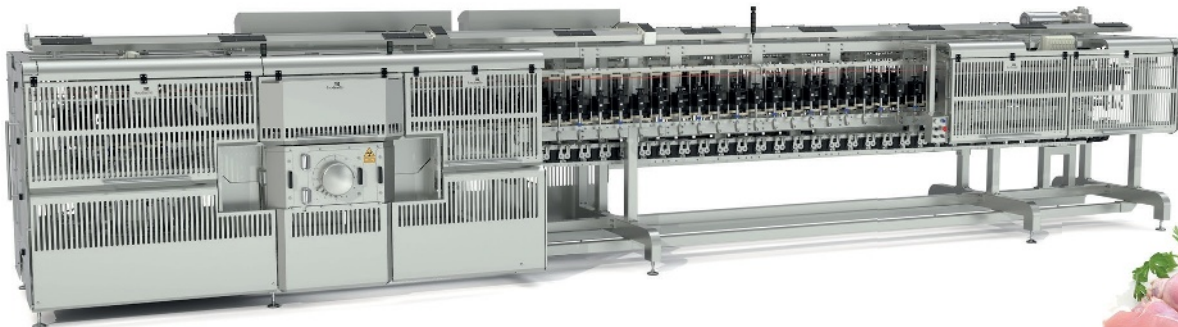
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## GLOBAL CHICKEN MEAT EXPORTS TO INCREASE 3 PERCENT IN 2018

## Selected major broiler producers in key exporting countries

	Million head slaughtered annually	Full profile
<b>Brazil</b>		
BRF	1,724	<a href="http://goo.gl/pMikqU">http://goo.gl/pMikqU</a>
Seara (JBS)	1,300	<a href="http://goo.gl/A41xAi">http://goo.gl/A41xAi</a>
Aurora Alimentos	197	<a href="http://goo.gl/vxfNGa">http://goo.gl/vxfNGa</a>
Copacol	180	<a href="http://goo.gl/OcavC0">http://goo.gl/OcavC0</a>
C Vale	105	<a href="http://goo.gl/reUtwF">http://goo.gl/reUtwF</a>
<b>United States</b>		
Tyson Foods	1,977	<a href="http://goo.gl/uNHXwB">http://goo.gl/uNHXwB</a>
Perdue Foods	683	<a href="http://goo.gl/UF2Fyi">http://goo.gl/UF2Fyi</a>
Koch Foods Inc.	624	<a href="http://goo.gl/elHdV3">http://goo.gl/elHdV3</a>
Sanderson Farms Inc.	507	<a href="http://goo.gl/B68qP1">http://goo.gl/B68qP1</a>
OSI Group	364	<a href="http://goo.gl/89IDFK">http://goo.gl/89IDFK</a>
<b>European Union</b>		
LDC	459	<a href="http://goo.gl/IAQwI5">http://goo.gl/IAQwI5</a>
Plukon Food Group	395	<a href="http://goo.gl/DwYQFA">http://goo.gl/DwYQFA</a>
AIA (Agricola Italiana Alimentare)	350	<a href="http://goo.gl/N2qn1C">http://goo.gl/N2qn1C</a>
Gruppo Veronesi	350	<a href="http://goo.gl/ypwmBh">http://goo.gl/ypwmBh</a>
PHW Group	350	<a href="http://goo.gl/QbwNJI">http://goo.gl/QbwNJI</a>
<b>Thailand</b>		
CP Group	685	<a href="http://goo.gl/7loe4R">http://goo.gl/7loe4R</a>
Thai Foods Group	148	<a href="http://goo.gl/CUf6p9">http://goo.gl/CUf6p9</a>
Betagro Group	130	<a href="http://goo.gl/W8he3p">http://goo.gl/W8he3p</a>
Caargill Meats (Thailand)	104	<a href="http://goo.gl/9raqn0">http://goo.gl/9raqn0</a>
Laemthong Corp. Group	100	<a href="https://goo.gl/Tma4Mk">https://goo.gl/Tma4Mk</a>
<b>China</b>		
New Hope Liuhe	1,000	<a href="http://goo.gl/kVU2dl">http://goo.gl/kVU2dl</a>
Wen's Food Group	819	<a href="http://goo.gl/XihB3T">http://goo.gl/XihB3T</a>
Doyoo Group	380	<a href="http://goo.gl/UFvMgH">http://goo.gl/UFvMgH</a>
Sunner Development Co. Ltd.	360	<a href="http://goo.gl/w2jSgd">http://goo.gl/w2jSgd</a>
OSI China	250	<a href="http://goo.gl/89IDFK">http://goo.gl/89IDFK</a>

Source: World's Top Poultry Companies database

at close to 3 percent, poultry producers can expect a year of gains, whether focused on their home or overseas markets.

Several of the world's leading poultry-producing countries, including Brazil, the EU, India, Thailand and the U.S., can expect to see higher output in 2018 and, for Brazil and the U.S. in particular, demand from export markets is expected to be particularly strong.

While disease is an ever-present risk, the world's key poultry exporters are mostly disease free, meaning they should be well placed to respond to growing demand.

The exception this year will be China, whose exports are expected to decline by almost 4 percent in 2018, wiping out the increases made in 2017.

So what can the major chicken exporting countries expect in 2018?

**Brazil**

With early 2017's quality concerns now firmly behind it, Brazil will continue its well-trodden path of capturing new markets and gaining greater market share in 2018. USDA forecasts made toward the end of 2017 indicate Brazilian exports will grow by 4 percent in 2018.

For 2017, even with the difficulties that Brazil faced dur-



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$$p = \text{freq}(A_1) \\ q = \text{freq}(A_2) \\ (\mu + v) \\ \text{Var}(p_{t+1}) = \frac{p_t(1-p_t)}{2N} = \frac{p_t * q_t}{2N} \\ p^2 w_{11} + 2pq w_{12} + q^2 w_{22} = \bar{w} 2N$$

$$p^2 \left( \frac{w_{11}}{\bar{w}} \right) + 2pq \left( \frac{w_{12}}{\bar{w}} \right) + q^2 \left( \frac{w_{22}}{\bar{w}} \right) = \dots$$

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## GLOBAL CHICKEN MEAT EXPORTS TO INCREASE 3 PERCENT IN 2018

ing the first half, exports are thought to have been slightly higher.

According to the Brazilian Association of Animal Protein Association (ABPA), exports of broiler meat over the first 10 months of 2017 reached 3.67 million tons, a mere 0.5 percent lower than the same period in 2016, indicating that, even before year-end, the industry's position in export markets

pected to reach record levels, growing by 2 percent to reach 19 million tons.

### European Union

Like the U.S., European Union exports have been hit by disease outbreaks. Nevertheless, the European Commission forecasts that sales beyond the bloc's borders will be higher in 2018, aided by the lifting of various trade embargoes.

During the first half of 2017, exports remained stable, despite some markets closing due to HPAI concerns. For 2017 as a whole, however, exports are thought to have fallen by 0.5 percent, also pulled down by decreasing demand from Saudi Arabia and South Africa. The Commission notes that reductions in some markets were largely



**Poultry Trends 2017:**  
<http://www.PoultryTrends.com/201711>

was almost fully recovered.

Markets closed to Brazilian product have reopened and, additionally, the country has made ground in other areas including resolving a trade dispute with Indonesia, new export agreements with European markets, and more processing plants recognized for export by the Chinese authorities.

### United States

Poultry meat exports from the U.S. are expected to grow by 3 percent this year, reaching 3.2 million tons.

The country is now free of highly pathogenic avian influenza, and strong demand for poultry meat is expected to come from the overseas and domestic markets. While several foreign markets are expected to increase imports of chicken meat from the U.S., demand from Mexico is expected to be particularly strong.

Poultry production in the U.S. this year is ex-

offset by gains in others.

For 2018, exports are expected to be a little under 2.5 percent while overall poultry production is expected to expand by 1.2 percent, slightly below 2017's growth of 1.3 percent.

The USDA notes that where Europe has performed particularly well is in exports of low-priced cuts, bone-in cuts and mechanically deboned meat to Sub-Saharan Africa, driven by lower production and grain costs.

### Thailand

Thailand's chicken meat production is expected to grow by 5 percent in 2018, while exports are forecast to be 4 percent higher, building on the export successes of 2017, and reaching 800,000 tons.

While positive, this represents a significant slowdown in the 12 percent increase estimated for 2017, when Thailand was able to take the place of Brazil in many markets and seeing sales reach 770,000 tons. Demand for Thai product has been particularly strong from Japan and neighboring countries, and Canada.



## GLOBAL CHICKEN MEAT EXPORTS TO INCREASE 3 PERCENT IN 2018

The Thai industry has benefited from robust prices and lower production costs. Additionally, while its neighbors have experienced disease outbreaks, Thailand has avoided serious cases.

Demand from these markets is expected to remain strong. However, Thai meat is gradually being displaced in the European market by local production.

Where domestic demand is concerned, the industry has benefited from an upturn in the Thai economy and rising incomes leading to greater purchasing power.

### China

China is expected to export 385,000 tons of poultry meat in 2018, a decline of 4 percent, and total broiler production is forecast to decline for the third year in a row. While China had seen a surge in exports to the European Union since the start of the decade, this has been falling off.

China's production is forecast to be 5 percent lower in 2018, the third consecutive fall in output. Production has been constrained by HPAI, limited availability of genetics, weak prices, and soft demand. Broiler meat imports are expected to rise by 7 percent in 2018 to 11 million tons. ■



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# US chicken consumption survey reveals purchase influences

The National Chicken Council's survey of chicken usage reveals shifts in consumption behavior and consumer attitudes about purchase criteria and product claims.

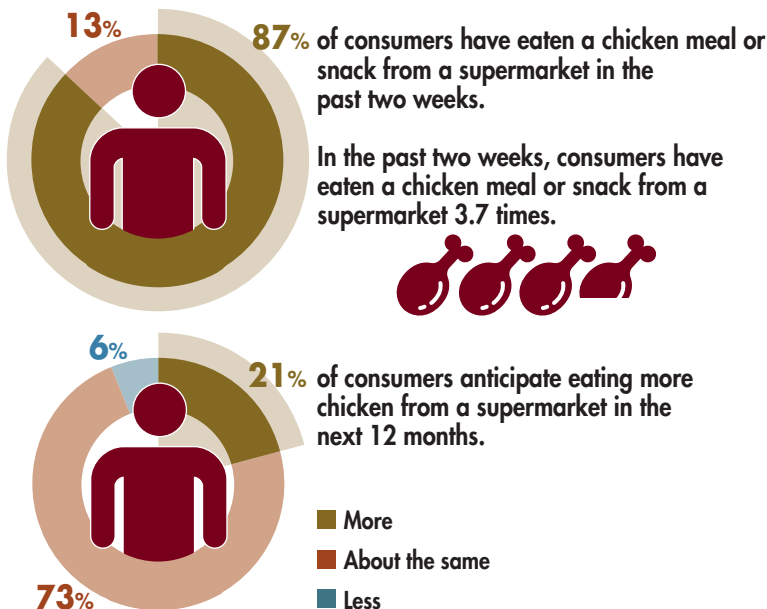
GARY THORNTON

The National Chicken Council's survey of chicken consumption behavior showed the frequency of consumption in 2016 and potential shifts in future consumption behavior.

- Price, freshness and taste are key purchase considerations, but other elements are at play.
- Most consumer concerns focus on health and

**@** Infographic: 3 trends that impact chicken purchases,  
[www.WATTAgNet.com/articles/31494](http://www.WATTAgNet.com/articles/31494)

## Supermarket chicken consumption behavior



Source: Joyce Neth, WATT Global Media, presentation at 2017 Chicken Marketing Summit; National Chicken Council frequency of chicken consumption survey

**Respondents indicated that their consumption of chicken purchased at supermarkets will increase in the next 12 months.**

food safety, though other concerns exist and merit awareness and preparedness.

■ Supermarkets and poultry brands likely can further leverage their credibility as sources of information for consumers.

The research results were presented by Joyce Neth, WATT Global Media, and representatives of ORC International at the 2017 Chicken Marketing Summit.

A total of 1,017 online interviews were conducted in June 2016 among a demographically representative U.S. sample of adults 18 years or older. The interviews yielded insights for poultry brands and retail grocery and foodservice outlets.



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ShowCo is an initiative for the introduction of an optimized concept for trade fairs in the global poultry industry. ShowCo members welcome you at the Premium Poultry Exhibitions around the world. Together they are able to present the complete offer for the poultry industry. Take advantage of this opportunity!

## Chicken consumption behavior

Chicken consumption remained high in 2016, returning to 2014 levels after a slight dip in consumption in 2015.

- 87 percent of consumers surveyed had eaten a chicken meal or snack from a supermarket in the past two weeks, up from 83 percent in 2014.

Foodservice-establishment consumption showed a notable increase from 2015.

- 72 percent of consumers had eaten a chicken meal or snack from a foodservice establishment in the past two weeks, up from 67 percent in 2015.

## Chicken purchase considerations

Freshness, price and taste are the most important decision factors for consumers when deciding to purchase from a supermarket or foodservice establishment. Price rates relatively low on satisfaction, indicating potential opportunity in influencing the consumer's perception of the product's value.

The methods of raising chicken is a decision factor worth monitoring. While "how chickens are raised" was only of moderate importance to consumers, it rated low on satisfaction.

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CHICKEN CONSUMPTION SURVEY

**Chicken attributes that influence purchases**

While freshness, taste and price are primary purchase drivers, the survey showed that three attributes have a secondary impact on likelihood to purchase – antibiotic free, locally raised and country of origin on the label.

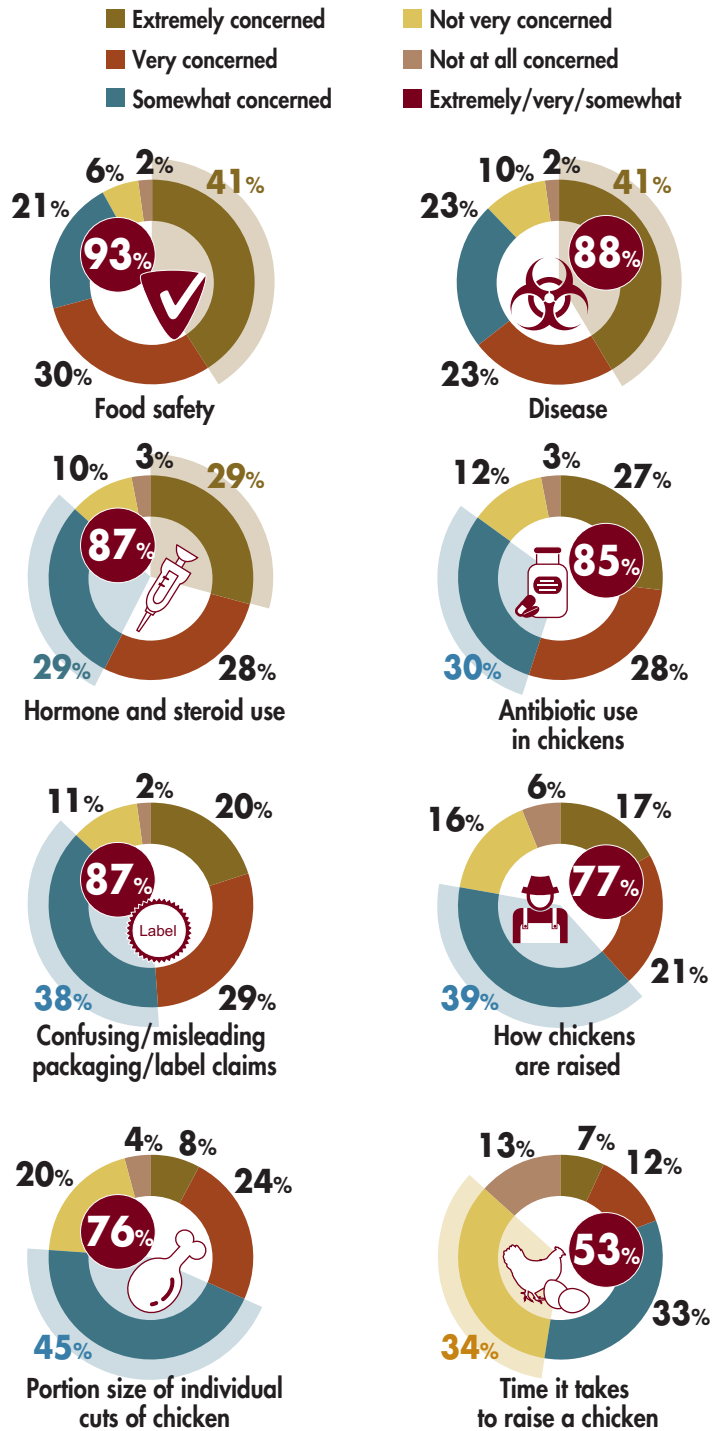
More than half (54 percent) of respondents said they would purchase more chicken labeled “no antibiotics/antibiotic free.”

**WHEN PROMPTED, CONSUMERS ARE significantly concerned about the chicken they purchase.**

It is revealing that the labeling claim “animal-only antibiotics used” would result in only 24 percent of the respondents buying more chicken. What’s more, the use of such labeling would be polarizing in its effect on purchase decisions.

Half of the consumers surveyed indicated they would buy more chicken labeled “locally raised.” Label information of a similar nature, “country of origin,” ranked third highest in potential purchase influence.

**Chicken purchase concerns**



Source: Joyce Neith, WATT Global Media, presentation at 2017 Chicken Marketing Summit; National Chicken Council frequency of chicken consumption survey

**A majority of consumers have concerns about the chicken they purchase, primarily regarding food safety and disease.**



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## CHICKEN CONSUMPTION SURVEY

Consumers indicated sustainability-oriented attributes are less influential in purchasing decisions. These involved environmentally friendly production methods and packaging.

### Language matters on chicken labels

U.S. consumers are concerned about how farm animals are raised according to different research studies, but the NCC survey indicated that broader terms such as “sustainably raised” may result in mis-

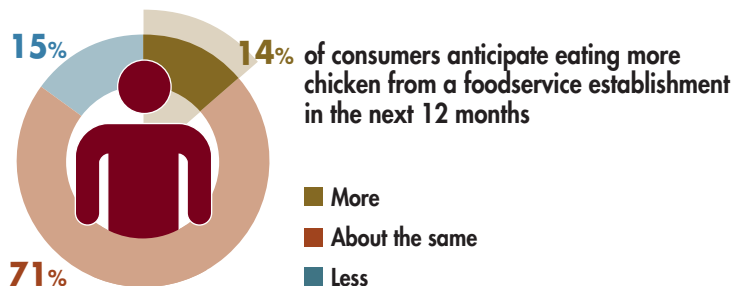
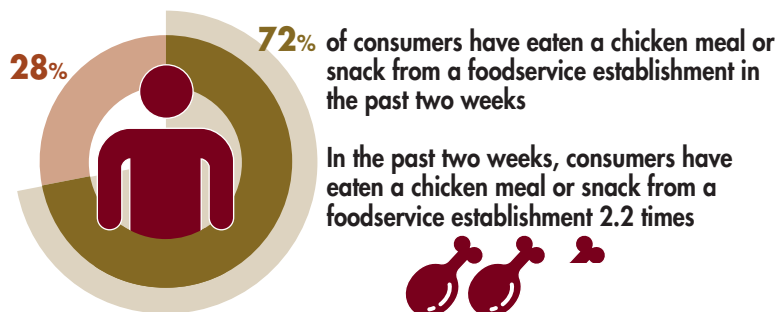
**SUSTAINABILITY-ORIENTED ATTRIBUTES** are less influential in purchasing decisions.

aligned consumer expectations that increase the risk of dissatisfaction, skepticism and eroding trust in the industry.

The phrases most highly associated with “sustainably raised chickens” include the following:

- The environmental impact of growing and raising chickens (48 percent of respondents)
- No hormones are used (37 percent of respondents)
- No antibiotics are used (35 percent of respondents)




## Foodservice chicken consumption behavior



Source: Joyce Neth, WATT Global Media, presentation at 2017 Chicken Marketing Summit; National Chicken Council frequency of chicken consumption survey

A smaller percentage of respondents had eaten a chicken meal from a foodservice establishment than from a supermarket, though 14 percent anticipate eating more foodservice chicken in the next 12 months.

## Unaided concerns when purchasing chicken

Base: Purchased chicken		973
<b>PRODUCT</b>		<b>34%</b>
	Freshness/expiration date/if it is old	23%
	Taste	4%
	Organic/natural/non-GMO	3%
<b>HEALTH/SAFETY</b>		<b>31%</b>
	Drugs/chemicals (subnet)	13%
	Hormones/steroids	9%
	Antibiotics	5%
	Bacteria (subnet)	8%
	Salmonella	5%
	General safety	4%
Cleanliness/processed in a clean facility/environment		4%
<b>TREATMENT OF CHICKEN</b>		<b>15%</b>
	How they were raised/treated/raised humanely	9%
	<b>PRICE</b>	<b>5%</b>
<b>NONE</b>		<b>30%</b>

Source: Joyce Neth, WATT Global Media, presentation at 2017 Chicken Marketing Summit; National Chicken Council frequency of chicken consumption survey

**Sixty percent of consumers have concerns about chicken that is to be purchased.**





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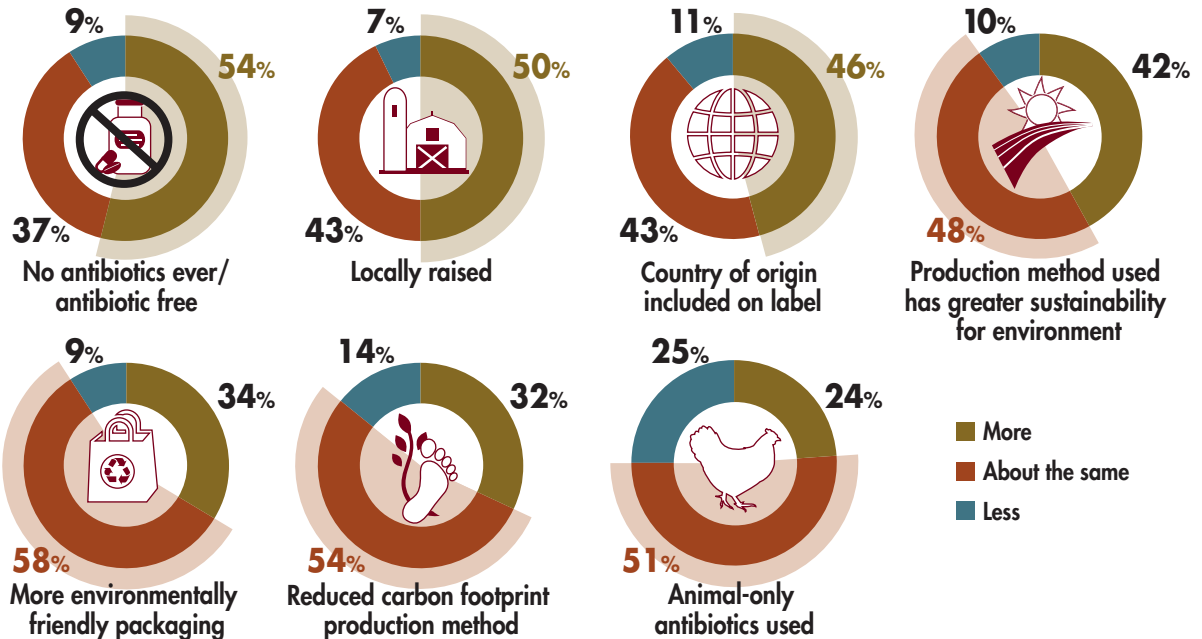


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CHICKEN CONSUMPTION SURVEY

Attribute influence on likelihood to purchase chicken



Source: Joyce Neth, WATT Global Media, presentation at 2017 Chicken Marketing Summit; National Chicken Council frequency of chicken consumption survey

While freshness, taste and price are primary purchase drivers, other attributes of secondary importance influence chicken purchase and consumption.



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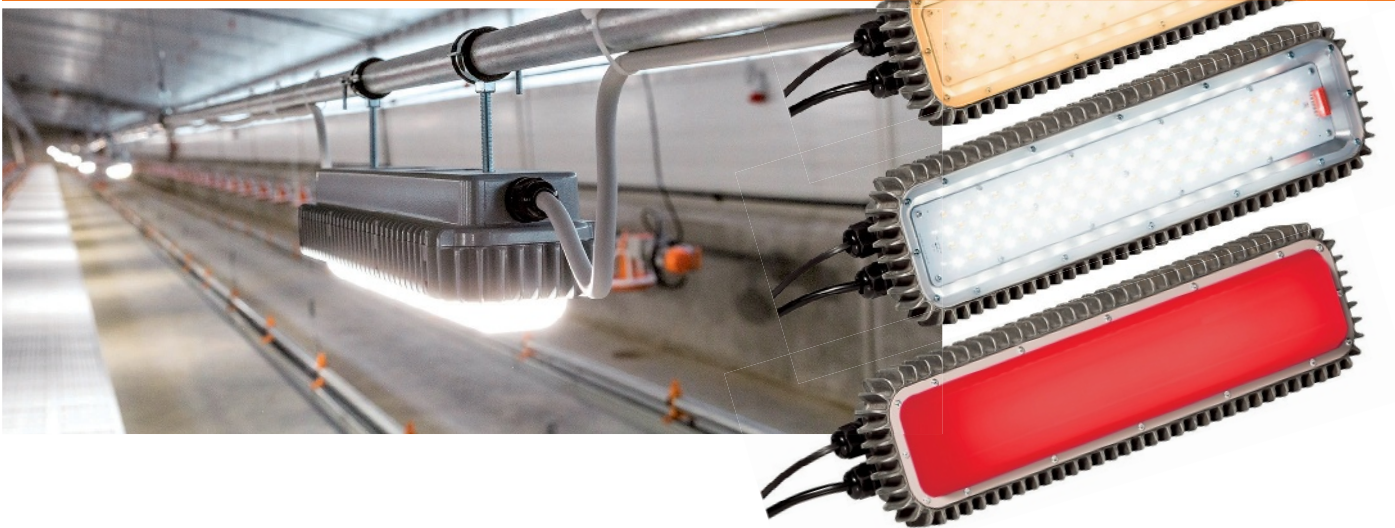
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## CHICKEN CONSUMPTION SURVEY

■ Chickens are treated humanely (34 percent of respondents)  
Fewer than one-third of re-

spondents associated “free range chickens” and “organic versus non-organic methods of raising

chickens” with the concept of sustainable production.

### Consumer concerns about chicken purchases

When prompted, most consumers are significantly concerned about the chicken



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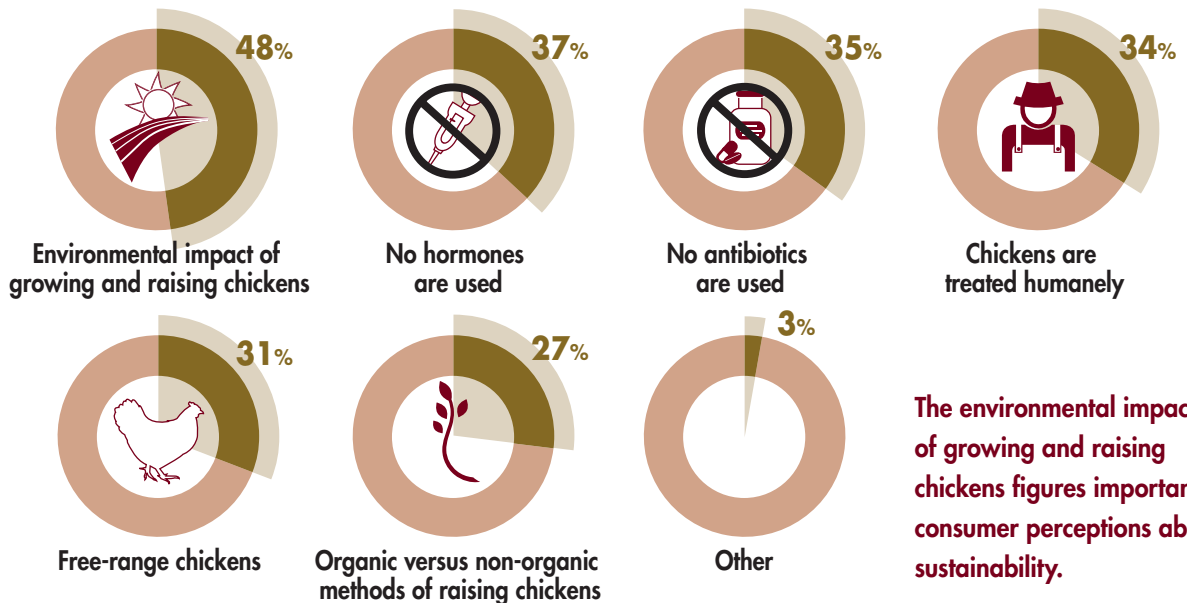
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CHICKEN CONSUMPTION SURVEY

Phrases associated with 'sustainably raised chickens'



The environmental impact of growing and raising chickens figures importantly in consumer perceptions about sustainability.

Source: Joyce Neth, WATT Global Media, presentation at 2017 Chicken Marketing Summit; National Chicken Council frequency of chicken consumption survey



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they purchase, primarily regarding food safety and disease. More than two thirds (71 percent) of consumers are “extremely” or “very” concerned about food safety. Another 21 percent are “somewhat” concerned about food safety.

More than half of respondents had significant concerns (extremely or very concerned) about the use of hormones, steroids and antibiotics in raising chickens. Confusing or misleading labeling was the fourth-highest concern among the respondents. ■

*Editor’s note: Elanco served as the primary research sponsor on the survey. WATT Global Media and the National Chicken Council served as contributing research sponsors.*





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# Rwandan egg farm uses modern production techniques

Rwandan layer farm sees improved output after incorporating modern farming practices.

MARK CLEMENTS

Egg production was not the first career choice of Jean-Baptiste Musabyimana, who has been operating a commercial layer farm in Rwanda for a little under two years.

But his egg farm, based in Bugesera, south of the Rwanda's capital Kigali, is viewed as being revolutionary in the country's egg sector.

The 18-hectare farm, which is still being expanded, first came into operation in March 2016 and has seen investments of RWF1 billion (US\$1.2 million).

Musabyimana's background is in finance. Based



The new open-sided houses are single span with concrete floors, making cleaning and disinfection easier. *Mark Clements*



The on-farm feed facilities are thought to be among the best in Rwanda. *Mark Clements*

in France, he made the decision to return home, and had the idea that setting up a modern egg farm in Rwanda might be one way to do this.

He approached several companies that supply European egg producers to ask if the same approaches carried out on the farms that they worked with could be

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## RWANDAN EGG FARM USES MODERN PRODUCTION TECHNIQUES



### Fencing around each house increases biosecurity and security.

Mark Clements

applied in Africa. A year and a half followed, which included looking at why African egg production tends to be lower than in more developed markets.

Studies complete and partners in hand, the new farm was set up, with a focus on sourcing the right genetics and

feed, and establishing good biosecurity. The farm has 48,000 ISA brown layers in lay but has the capacity to house 65,000. At end of lay, birds are sold for meat.

### Focus on biosecurity

The farm has a shower block and all workers must shower before entering the layer houses. The farm has its own water storage facility, so there can be no excuse not to shower at the start of the working day. Additionally, workers are also provided with a canteen.

The farm is gated, and each of the site's houses is surrounded by a fence, meaning that it is not possible to simply walk directly from one to another.

The layer houses themselves, each with a capacity of 7,000-8,000 birds, are single-span buildings with no sup-



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porting columns, and with concrete floors, making cleaning and disinfection easier.

Unusually for Rwanda, the layers are not caged, but kept on woodchips and rice waste bedding, resulting in welfare being higher than in competitor farms.

Between each house, there is a small packing station, meaning eggs can be packed on site before being sold to intermediaries and then shipped to Congo.

### The best in Rwanda

The farm's flock is fed mash rather than pellets. There are six silos and raw materials, including corn from co-ops and sourced locally, while additives are imported from France. The farm has two crushers, said to be the best in Rwanda, and feed production is automatically controlled by the farm's formulation room.

Where drinking water is concerned, it is treated with chlorine, and intake is measured. The farm has an on-site veterinarian to keep an eye on any potential health issues.

While the eggs produced at Musabyimana's farm may be bigger than the average produced in Rwanda, shell quality better, and levels of welfare higher, this does not result in a price premium for his eggs. However, where the farm is able to gain an advantage is that, by being close to purchasers, transport costs are lower.

### Rwandan poultry sector draws international focus

[www.WATTAgNet.com/articles/32168](http://www.WATTAgNet.com/articles/32168)

Despite this lack of recognition, Musabyimana remains optimistic, believing that Africa must satisfy its own demand rather than relying on imports. More layer houses are being equipped and readied for production. ■



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# VIV MEA expanded, enriched for 2018

Launch edition in 2016 exceeded expectations

VIV MEA 2018 is billed as the international trade show from feed to food for the Middle East and Africa.

With more than 300 exhibiting companies from more than 40 countries and an expectation of 8,000 visitors, VIV MEA 2018 has been expanded into an extra hall at the Abu Dhabi National Exhibition Center. After a launch edition in 2016 that exceeded expectations, this international event comes back with an enriched conference program covering dairy, fish, poultry and eggs. Strongly driven by business, VIV MEA will offer more

products and trade opportunities to industry professionals in the Middle East and North Africa region.

The feed-to-food concept brings together supply and demand within the complete animal protein chain. The driver behind the chain concept is that animal feed and animal health are vital for meat quality and safety. VIV MEA will represent every step in the meat, seafood and dairy production process.

At VIV MEA, suppliers from all segments of the feed-to-food chain will be represented, from suppliers of feed/ingredients and animal health to equipment for breeding, farming, slaughtering and processing.

Situated in the heart of the Middle Eastern mainland, Abu

## WATT Global Media Poultry Trends MEA 2018

**February 6 at 9:30 a.m. in Capital Suite 9**

WATT Global Media will host a seminar, Poultry Trends MEA 2018, which will comprise two presentations: one looking at broiler production in the region and the other looking at egg production. Expert speakers will trace how the region has grown over recent years, and look at how consumption and production can be expected to develop over the years ahead. Particular attention will be paid to market structures, consumption drivers, globalization and trade, and opportunities and challenges. Following the presentations, there will be a question-and-answer session.

Dhabi serves as a gateway to the emerging economies of the Greater Mekong Subregion. With its well-developed infrastructure, political and social stability, and consistent openness to foreign investment, it has been a magnet for overseas companies looking for a strategic location to set up or expand business.

VIV MEA will be held February 5-7 at the Abu Dhabi National Exhibition Centre in Abu Dhabi, United Arab Emirates. ■

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# Saudi Arabia's poultry industry growing despite challenges

The Saudi Arabian government has set increasing broiler production as a priority, but the industry still faces significant hurdles.

MARK CLEMENTS

Saudi Arabia's chicken producers are being encouraged to raise production and follow in the footsteps of the kingdom's egg sector, which has more than satisfied local demand for decades.

Saudi Arabia's output of chicken meat and eggs are thought to have continued their upward trends last year with broiler meat output reaching 760,000 tons, up slightly from the 755,000 tons recorded in 2016, while table egg production rose by 2 percent to stand at 5.1 billion.

Output of broiler meat in the kingdom is expected

to continue upwards for the foreseeable future, reports the U.S. Department of Agriculture (USDA). The Saudi government has set a strategic goal of satisfying 60 percent of local demand within the next five years, and several development projects are in place to help reach that target.

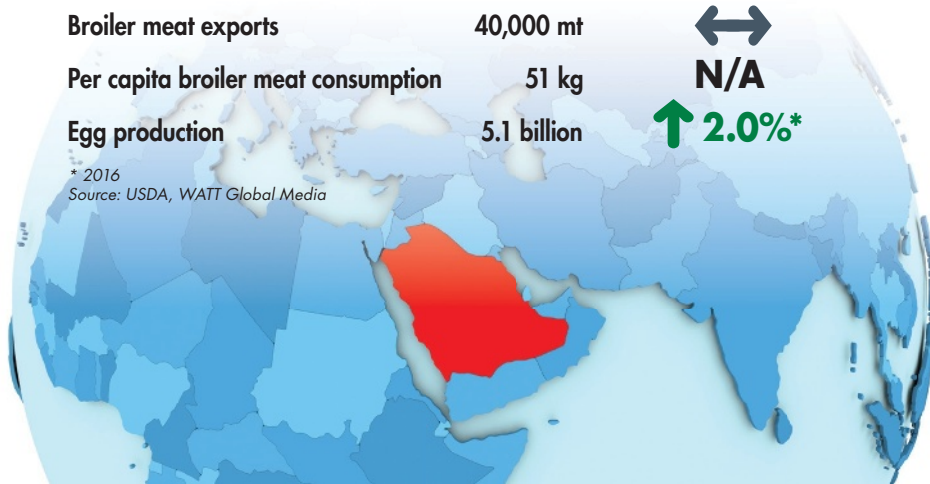
For example, the country's largest poultry producer, Al-Watania, is in the process of constructing a mega poultry farm in the province of Al-Jour, which is expected to be operational by 2020. The farm will increase the

company's daily production of broilers from 820,000 to 1 million. Table egg production is planned to rise by 1.5 percent to 3 million eggs per day.

## Saudi Arabian poultry sector at a glance, 2017

Broiler meat production	760,000 mt	↑ 0.7%
Broiler meat consumption	1.51 million mt	↓ 6.0%
Broiler meat imports	790,000 mt	↓ 11.0%
Broiler meat exports	40,000 mt	↔
Per capita broiler meat consumption	51 kg	N/A
Egg production	5.1 billion	↑ 2.0%*

\* 2016  
Source: USDA, WATT Global Media



Saudi Arabian poultry meat production is thought to have risen slightly; exports were static, while internal consumption fell. *USDA, Watt Global Media*

## High demand, high hurdles

Saudi Arabia may have one of the highest levels of per capita poultry meat consumption in the world – 51 kg – but satisfying that demand locally is not easy, despite increasing chicken production being a government strategy.

Small and medium-sized farms still confront high levels of bird mortality, mainly caused by disease outbreaks, including Newcastle disease and avian influenza. The country's Ministry of Agriculture has, however, been working with producers to help bring mortality rates down,

and this intervention is thought to have made significant contributions to rising output levels over recent years.

While the government may offer help with vaccines, equipment, feed and other input costs, purchasing land in the kingdom is reported to be difficult and subject to a variety of restrictions, and this is believed to be holding back smaller producers in particular.

Additionally, concerns over the depletion of water reserves have resulted in restrictions on crop production, notes the Food and Agriculture Organization. Cultivation of wheat was phased out in 2016, and green forage crops will be phased out by 2019, meaning that livestock producers are becoming more reliant on imports. The government also is looking to better balance its books and cut back on imports.

Consumption of broiler meat in the country is thought to have fallen last year, due to a large number of expats leaving the country. These departures are ex-

pected to continue dragging consumption down. With a local preference for fresh or chilled birds, the decline in population will particularly affect importers of poultry

## Middle East, African poultry industry growth continues

[www.WATTAgNet.com/articles/26053](http://www.WATTAgNet.com/articles/26053)

meat, which tends to be frozen.

Approximately half of the poultry meat consumed in Saudi Arabia is imported. However, last year saw import volumes decrease by 11 percent.

### Eggs

Saudi Arabia is 114 percent self sufficient in eggs, and exports about 15 percent of production. The industry is highly developed and produced 5.1 billion table eggs in 2016, an increase of 2 percent. ■



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# Robotics in poultry production to transform sector

Robotics in poultry production can be expected to make the sector more efficient, but producers should help to shape how the technology is employed.

MARK CLEMENTS

The market for robotics in agriculture is forecast to reach US\$11 million by 2023, according to Research and Markets. While, for many, robots may seem the stuff of science fiction, they are already appearing in chicken and egg production.

Discussions at trade show SPACE suggested that robotics would not only transform the efficiency of livestock production but, rather than being a technology to be feared, their use could make agriculture more attractive, transform the role of livestock producers completely, and take on activities that are repetitive or dull.

It may not simply be the lives of producers that are improved. Where poultry and other livestock are concerned, use of robots could improve welfare, through reducing contact with human beings.

The evolution of the agricultural robotics industry is expected to gain pace. Poultry and egg producers must keep abreast of change and adopt new technologies and, as the sector continues to mature, producers will need to guide what exactly the robots of the future will be, and how they will fit into the production methods society deems acceptable.

## Friend or enemy?

While there may be numerous positives to employing robots on the farm, there is also the risk of various negatives. For example, society is al-

ready ever more disconnected from livestock production and use of robots may hasten this trend. To counter this, producers will need to become better communicators, not only to allay concerns expressed by the public but also to ensure that robots exactly carry out the tasks required of them.

Among robots already being commercialized for poultry production at SPACE were:

### ✓ Octopus Scarifier

The Octopus Scarifier is said to be the first robot of its kind in the world, designed to aerate litter and monitor facilities.



**The Octopus Scarifier improves litter quality, monitors house conditions and can apply biocides in aerosol form to reduce bacterial load.** *Mark Clements*



The robot has advanced communication and navigation systems that are on a par with autonomous vehicles. It is mobile, intelligent, autonomous, self-recharging, can be operated 24/7, and its unique scarifier turns and aerates all litter types. It also continuously maps indoor temperature, humidity, CO2, noise and light levels.

A version for the decontamination of empty poultry houses is also available, called the Octopus Poultry Safe.

**To watch the Octopus Scarifier and Spoutnic in action, go to**

<https://goo.gl/2ip1NL> and  
<https://goo.gl/eXofdl>

The Octopus Scarifier can be equipped with various modules, designed to decontaminate buildings and deliver liquid medicines or vaccines. Its manufacturers note that the robot can improve welfare and reduce mortality as turning and ventilating litter helps to prevent the onset of aspergillosis, podermatitis, and hock and breast injuries, which may lead to death and down-grades at processing.

Regular aeration of litter also inhibits fermentation and reduces ammonia levels, and application of biocides directly into the turned litter can reduce bacterial challenge, increasingly important as concerns surrounding over-use of antibiotics and antibiotic resistance mount.

✓ **Spoutnic**

The Spoutnic, produced by Tibot Technologies, is the brainchild of a husband and wife with a breeding flock, and was dreamed up after the latter developed health problems and was no longer able to walk the house to prevent birds laying on litter.

The Spoutnic can move randomly throughout the hen house, forcing birds to move.

In addition to simply journeying through the

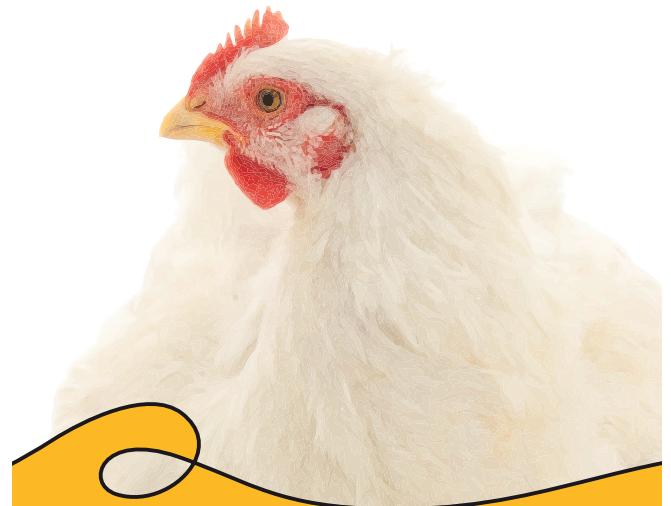
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Members of the Italian branch of the WPSA are working very hard to make this summit a very informative, enjoyable and one to be long remembered.

A number of excellent keynote speakers coming from different countries have lined-up to share with us their expertise and know-how.

Some novel sessions of major importance to the industry at this time have been added.

Very sincerely,

Nuhad J. Dagher, President MPN of WPSA

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## ROBOTICS IN POULTRY PRODUCTION TO TRANSFORM SECTOR



**The Spoutnic not only encourages birds to lay in nest boxes but encourages movement, promoting weight gain and health.** *Mark Clements*

poultry shed, the Spoutnic is equipped with lights and sounds to prevent birds becoming habituated. Work with a university research team has resulted in various combinations of lights and noises which can be changed over time.

The robot can move at a variety of speeds and can pass over eggs without breaking them.

The Spoutnic may encourage layers to lay in nesting boxes, but it also offers other benefits. By encouraging birds to move, there is an improvement in weight gain and health, and the Spoutnic's random movements do not result in stress or birds panicking.

Once charged, the Spoutnic can perform for a guaranteed eight hours. ■



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# How NIR poultry feed ingredient analysis increases output

A better understanding of poultry feed ingredients raises profitability and helps producers face growing challenges.

MICHAEL BEDFORD



A more in-depth analysis of raw feed materials is now possible, helping to improve feed formulation.

*Patrick Jennings | Shutterstock.com*

Delivering broiler and layer nutrient requirements with unfailing accuracy, without over or under supplying, is key to maintaining production efficiency. However, knowing how to do this means getting to know a lot more about the ingredients being used in diet formulations, including corn, soy and indeed all raw materials.

Nutrient excess must be avoided as much as nutrient deficiency, as disturbances to digestive efficiency or severe nutrient imbalances can result in undigested nutrients reaching a bird's large intestine, where fermentation patterns may change. This can lead to an environment more favorable to pathogenic bacteria and disease outbreaks. Understanding the value of additives in improving digestive efficiency is important to ensure full advantage is taken of their effects.



**Poultry producers are expected to face growing challenges and will need to look at how to make incremental gains to ensure a competitive edge.** | *Gualberto Becerra, Shutterstock.com*

## Know your materials

A key area for development in terms of tackling the multifactorial challenges set to affect the poultry feed sector is likely to be real-time ingredient analysis, which enables nutritionists to ensure that the diets being manufactured deliver the nutrients required. Recent developments in near-infrared spectroscopy (NIR) technology mean that a more in-depth analysis of raw

materials is now possible — in turn helping to improve enzyme application and poultry feed formulation.

With levels of the antinutrient phytate varying not just between feedstuffs but within a single raw material, NIR gives nutritionists confidence that there is sufficient substrate on which a phytase enzyme can act.

Where higher levels of phytate are detected, producers can use higher doses of phytases to increase phosphate availability and reduce the antinutritive effect of phytate more effectively. This allows producers to tap into opportunities for incremental gain that may otherwise have not been realized.

Better and more rapid identification of key antinutrients, ranging from mycotoxins and nonstarch polysaccharides (NSPs) to phytate, is set to play a key part in the future of the poultry industry — and a good example of this is the way in which companies have changed with regard to applying feed enzymes such as phytase.

### Growing understanding of phytase

While phytases were originally used to release phosphorus, feed manufacturers are becoming much more aware of the extra-phosphoric effects that can be exploited by using products to target the complete breakdown of the phytate level of the diet.

The process is being used to particular effect in the ongoing effort to tackle woody breast. Research has demonstrated that high doses of phytase, combined with nutrients that support the antioxidant status of the animal, can play a role in reducing the severity of the condition.

Within the enzyme sector as a whole, secondary effects will become of equal importance as the primary effects – inositol release being one example. Understanding that there are marked differences between products, and the way they attack the substrate, is important, hence the need for evaluation.

Poultry nutrition has seen significant advances in the past 50 years, with the introduction of ingredient analysis, least cost formulation and the advent of a multitude of additives including vitamins, amino acids, antibiotics, coccidiostats and enzymes.

### Growing challenges

The next 10 years look set to bring further developments with changes in industry practices, increased competition and mounting pressure from consumers.

Feed companies are expected to reduce their reliance on antibiotics while maintaining production efficiency, necessitating a greater degree of precision in nutrient delivery with minimal antinutrient contamination.



### Precision poultry nutrition shapes industry's future

[www.WATTAgNet.com/articles/30774](http://www.WATTAgNet.com/articles/30774)

Concurrently, the availability of raw materials, with staple ingredients such as corn and soy likely to be limited as a result of production pressures, prohibition of GMOs, and climate change, will become an increasing issue. Shortages may be a particularly apparent in the Middle East, where water-intensive crops tend to be imported from the U.S., Canada and Europe, rather than grown locally.

With these changes in global markets, companies are increasingly looking at ways that incremental gains can be achieved to ensure a competitive edge and ongoing profitability.

As a result, companies are spending increasing amounts of time and effort evaluating products, suppliers and different applications, with nutritionists and scientists focused on identifying ways to make incremental improvements to feed.

Formulating diets to meet precise nutritional requirements means fewer resources are wasted, fewer problems are created in the gut, and broilers can be fed with fewer problems. While it is tempting to focus on the next big thing to deliver a major step change, the role of small initiatives to advance energy and nutrition efficiency should not be underestimated. ■

*Michael Bedford is the research director with AB Vista*

*orestligetka, fotolia*

# Understanding rice bran in pig, poultry feeds

Rice bran is an atypical ingredient; it has excellent nutritive value, but it is undervalued by most nutritionists and the commodities market.



**Rice bran can be a valuable ingredient if it is of high-quality origin.** *Palagiri | Wikimedia.org*



**Field rice comes with a tightly attached hull that is rich in silica.** |

*Indiatraveler | Dreamstime.com*

IOANNIS MAVROMICHALIS

Rice bran is a misnomer, or rather a confusing term because it can encompass a range of rice by-products at variable concentrations. But rice bran it is, and this name has prevailed in literature and commerce. It is a very atypical ingredient: it has excellent nutritive value, but it is undervalued by most nutritionists; it is widely available, but hardly traded in the commodities market. Understanding how rice bran is produced and its problems will help nutritionists seek out this eccentric ingredient and use it in pig and poultry diets with confidence.

## The rice milling process

It all starts with rice grain as it arrives from the field. The rice we grow and the rice we humans eat do not look the same. Field rice comes with a tightly attached outer husk or hull, very much like barley and oats. Removing the hulls is the first step in the rice milling industry. Unlike other similar cereals, rice has hulls extremely rich in silica (silicon dioxide), better known as quartz or sand. As such, rice hulls are immensely abrasive not only on the feed mill machinery, but also inside the animal.

## Read more: 5 guidelines for alternative animal feed ingredients

Consumption of rice hulls at sufficient quantities can cause diarrhea (best case scenario) and



internal bleeding (worst case scenario). Obviously, the damage increases with ingested volume. As such, it strongly prohibits using rice hulls in diets for pigs and poultry — even at the slightest concentration. Most rice mills use rice hulls as a source of energy as they burn it to produce heat or electricity, or both. Lamentably, some mills incorporate some part of their rice hull production into rice bran, and this is the first reason why some such products fail. To this end, it is recommended to test incoming rice bran for silica according to volume and frequency of loads.

When the hulls are removed, we are left with a brownish grain — also known as brown rice. This looks very much like wheat, and like wheat, it is very hard to boil and chew. Thus, the outer brown layer, which is rich in fiber (the hard to chew part), is removed. This is the actual “bran,” again equivalent to wheat bran, even in the profile of the fiber: it is rich in pentosans, especially arabinoxylans. Because of this, it should be equally beneficial to use a wheat-specific enzyme when high levels of rice bran are used. Most likely, this is going to benefit more poultry than pigs, but all these assumptions require documentation.

Further down the rice milling process, the embryo is removed. Rice grain is a seed, after all, and contains an embryo that will give a new plant — the rest are its first food. This embryo is rich in protein and oil. Removing them leaves the rice we consume, which is practically a starch-rich staple. In some instances, especially in Asia, rice oil is extracted, but in most cases, the embryos are blended with bran. This is a desirable process, but it can also be the root of many troubles. Along with the oil, there are a good amount of enzymes that oxidize it (used by the new seedling to obtain its first energy “drink” before starch is mobilized from afar). These lipoxidases start acting as soon as they are exposed to the air, and this happens when the embryos are torn apart during the milling process. Thus, rice bran con-



**Removing the outer hull leaves a brownish grain.**

*Airborne77 | Dreamstime.com*



**White rice is a polished grain that is mostly starch.**

*Andrey Ospishchev | Dreamstime.com*

tains high levels of oil, which gives it high nutritive value for animal feeding, but this oil might be highly oxidized, which causes feed refusal by animals — especially young ones. To prevent this, an antioxidant should be added at the rice mill, but this is seldom done, perhaps due to cost or lack of mixing abilities. If unprotected, full-fat rice bran (as it is often called) will oxidize rapidly unless it is consumed within days from its production.

## UNDERSTANDING RICE BRAN IN PIG, POULTRY FEEDS

**The final product**

To arrive at the highly glossy rice we buy at the supermarkets, rice mills must polish the final product. This is achieved by friction using calcium carbonate. This is why when we rinse rice before cooking it the water is cloudy. The amount of calcium carbonate used is minimal, but it should be taken into account as this mineral is used in many nutrition products, such as soybean meal to increase flowability, and vitamin, mineral, medicinal premixes as a carrier and diluent. Thus, calcium laboratory

analysis is required to ensure the correct calcium level is entered in the feed formulation matrix. Rice polishing leaves behind a dust of calcium carbonate and starch, which are again added into wheat bran, without diminishing its quality — but they do come at a very distinctly finer particle size so separation could be an issue if embryo-derived oil is not in the mix to keep everything “in suspension.”

The final thing we must be aware of rice bran is that it is a cereal rich in phytate. In other words, it contains negligible

amounts of digestible (pigs) or available (poultry) phosphorus. Only 12 percent of total phosphorus is of any use to these animals — the rest is excreted in the manure. Adding the enzyme phytase will most likely benefit any diet containing rice bran, but perhaps an extra dose might be warranted — again a very nice theory that requires input from those most interested in this business: the phytase suppliers. As it stands, rice bran-based diets require increased supplementation with phosphates (mono- or di-calcium phosphates), which



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should not be a problem for most mills, unless a concentrate of micro-ingredients already containing phosphate is used. In this case, the mill will need to provide for an additional/occasional ingredient: a phosphate to be used in diets rich in rice bran.

In conclusion, rice bran is a valuable ingredient as it contains about 14 percent crude protein, 7 to 10 percent crude fiber and up to 17 percent oil. This gives it a net energy concentration of 10 MJ/kg for pigs, and a metabolizable energy of 11.5 MJ/kg for poultry. Absence of any hulls

and stabilization of the oil will ensure a high-quality product that can be used at levels restricted only by its fiber concentration in all diets for pigs and poultry. ■

*Ioannis Mavromichalis, Ph.D., is an animal nutrition industry consultant. To contact Mavromichalis, email [imavromichalis@icloud.com](mailto:imavromichalis@icloud.com).*

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2017  
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# Poultry products recognized in **SPACE** innovation awards

New products and innovations for chicken and egg production were recognized at SPACE 2017.

MARK CLEMENTS

Chicken and egg production products once again were featured in the most recent Innov' Space awards, the awards program that has taken place each year at France's trade show SPACE for more than two decades.

Across species, there were almost 160 products and services up for consideration.

Nine products were award one star last year, none were given two, but two products received the highest accolade – three stars.



DSM Nutritional Product's *Digital YolkFan*, developed in conjunction with Nix Sensor Ltd., was one of the two products last year to win three stars. Digital YolkFan brings egg color measurement into the digital era, and is the first color sensor developed to measure egg yolk color objectively.



**DSM's Digital YolkFan is a digital extension of the company's YolkFan, providing the same practicality and colors, but extended into a digital tool.** DSM

Powered by a handheld Nix Sensor, which has its own light source and blocks out ambient light, the Digital YolkFan allows a more accurate and easy way of recording the color of egg yolks and displays results via a smartphone app.

**PickPuck** feed distribution equipment, from Big Dutchman International, has been designed to stimulate hens' natural behavior



**PickPuck from Big Dutchman keeps birds stimulated and smooths beaks at the same time.**

*Big Dutchman*

of searching out food, helping to prevent boredom.

Also a recipient of three stars, PickPuck comprises a swinging plate with a coarse surface that is suspended below a drop pipe delivering feed. When a hen knocks or pecks the

plate, a small amount of feed is dispensed which can then be eaten. The coarse nature of the plate also helps to wear down her beak. Grains that fall into the litter also help to promote natural scratching behavior.



**BlueFan** ventilation equipment from Skov is a flange-mounted, corrosion-free fan with a cone and motor-controlled shutter. The BlueFan can be used in combi-tunnel and tunnel ventilated houses and is controlled by the climate computer. It is available in a version focusing on low energy consumption and a version focusing on maximizing air output. Both are available in several variants.

BlueFan has a tightly closed motorized shutter, preventing unwanted air movement when not in operation, and a direct drive motor to reduce maintenance. The BlueFan is made of plastic and stainless steel and is de-



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## POULTRY PRODUCTS RECOGNIZED IN SPACE INNOVATION AWARDS

signed especially for the demanding house environment.

*Chicken'Lib* is a mobile henhouse equipped with solar panels, meaning that it does not have to be near a source of electricity. Manufacturer Beiser Environnement notes that the house can be easily constructed using a forklift truck and is easy to move and manage. Blinds are installed to control light,



**Innovative poultry products recognized at SPACE 2015**

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while its ventilation inlets can be managed remotely. The mobile henhouse offers farmers energy savings and can contribute to protecting health status when moving flocks.

*Desvac Duo*, from Ceva Sante Animale facilitates the simultaneous or separate application of vaccines and gels in the hatchery.

The equipment has two arms, adaptable to all conveyor types, and allows vaccines and gels to be applied in-line without the need to stop the movement of chick baskets, which saves time when compared with traditional methods.

*Desvac Duo* administers vaccines commonly used in the hatchery, while its gel delivery system can supply gels containing barrier flora, nutrients and rehydrating products.

*Desvac Duo* works with a colored liquid gel that can be applied as droplets across the whole surface of the basket, covering all chicks while, where vaccination is concerned, flat jets ensure that all chicks are vaccinated.

*EW Nutrition's Easy* facilitates direct on-farm addition of liquid compound feeds to compound feed. *Easy's* simple technology takes advantage of the feed conveyor's available motion energy, making it energy saving and eco-friendly. *Easy* frees up water lines, often used to deliver vaccines or pharmaceuticals; and, by not including liquid feeds in water lines, biofilm growth is reduced.

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Designed to be user-friendly, the product requires low financial investment and is installed without technical support.

*Firstlit* from Dugue is an automatic litter-spreading system that delivers pelleted straw in poultry houses of any length and up to 30 meters in width.

The system comprises a 21-square-meter silo, a screw to deliver pellets, a spreader, and a programmable controller. Suspended from the house's roof structure, Firstlit evenly distributes litter throughout the house prior to stocking, or can top up litter once the flock is in place.

*My.Luda.Farm*, from Luda Farm is a dashboard for use on smartphone, tablet or computer that collects data from sensors and cameras around the farm and gives the farmer remote control over critical equipment. Delivered through an easy-to-use interface, the application allows farmers to check cameras, turn equipment on and off, and check fences or diesel levels.

Included in the platform is a simple task management program, and the app can link events together: For example, an alert can be linked to turning on a camera.

*Roxell's Natural Beak Smoothing-NBS* is a rough-surfaced broiler breeder feeding system to smooth birds' beaks. The rough interior of the feeding pans controls beak growth continuously as birds eat.

*Nectra Ultrascan* can be used across species for candling from the fifth day of incubation. A multispectral ray is used to read the metabolic development of eggs while ignoring interference from noise, light or electromagnetic fields.

Manufacturer Nectra says the product offers improvements in incubation that can be achieved by identifying the poorest positions in an incubator or egg tray. The energy-saving Nectra Ultrascan raises health quality in incubators by allowing the early removal of dead eggs. It is non-invasive, does not rely on lasers and can identify eggs that may have been placed upside down.

*Scraper FAF*. FAF's galvanized steel Scraper can be adjusted to fit all pits, operated by a stainless steel cable molded with balls, which acts as a chain. No specific masonry is needed to support the scraper, which is equipped with 24-volt motors and can be operated manually or automatically. ■



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# How to improve chicken leg meat profits, reduce waste

To maximize yield and profitability, poultry processors need to make every gram of meat count, and this includes leg meat.

MARK CLEMENTS

To maximize yield and profitability, poultry processors need to make every gram of meat count, and this includes leg meat.

In western markets, the lower value often associated with leg meat compared with breast meat means that not all of the broiler carcass meat will achieve the same return for processors.

However, by offering leg meat in presentations that align with today's lifestyles, emphasizing its taste and nutritional qualities, and helping to foster a change in consumer perceptions, processors can seek to extract more value from the parts of the carcass that are too often considered secondary, delegates at Marel's Poultry ShowHow, held

in Copenhagen, Denmark, late last year, were told.

## Varying popularity

Chicken thighs tend to have a slightly darker meat than breast meat, and are often seen as less attractive and less healthy. Yet there is little nutritional difference between breast and thigh meat, including protein, carbohydrates, cholesterol, calories, sodium and iron. While the fat content in leg meat may be slightly higher, it keeps the meat succulent and aids taste.

And it is not always the case that leg meat is seen as second best year-round in mature western markets. Sales of legs rise during the summer months, meaning that consumers already have some interest in opting for leg meat, be it bone-in legs, drums or thigh fillets.

Leg meat, either on its own or mixed with other cuts, is already used in several products, including nuggets, patties and sausage, yet in addition to using leg meat as an ingredient, or selling it bone-in, there are several options that processors may want to consider.

## Extending presentation options

Given the taste qualities of leg meat, there are ample opportunities for its use in strips, bites, popcorn, as cubes for skewers and -- if carefully removed, flattened and portioned -- leg meat can be coated and marinated, opening it up to a



Carefully harvested thigh meat can be processed into a variety of presentations. *Marel*

variety of innovative presentations, said Pieter Klaas Hopma Zijlema, Marel sales manager convenience.

Thigh meat steaks, for example, remain a niche in Europe, but in Asia, 85 percent of steaks and chicken burgers are made from thigh meat.



**Cubed thigh meat can be more succulent and tasty than breast meat, and an ideal presentation for skewers and easy-to-eat presentations.** *Marel*

In Japan, for example, a thigh fillet can be twice the price of a breast fillet, and Asian cuisine can offer several examples to Western processors that could easily be adopted in markets where leg meat remains undervalued.

Sate is already widely known, however the Japanese skewer presentation yakitori and the deep-fried karaage, which sees thigh meat mixed with skin, are less well known, but could offer processors the opportunity to add value.

The difference between Asia and Europe and the U.S. may already be closing where leg meat is concerned.

A survey of professional chefs in the U.S. found that they much preferred to work with leg meat when preparing chicken dishes, while in Europe, the gap between the retail price per

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## HOW TO IMPROVE CHICKEN LEG MEAT PROFITS, REDUCE WASTE

kilogram of breast and thigh fillet is closing, and in some markets is less than 10 percent. Interest in portioning thigh meat is thought to be growing particularly strongly in Eastern Europe, Finland, Romania and Spain.

Where catering to modern lifestyles is concerned, it is worth remembering that the average time that consumers spend preparing food in many markets has fallen dramatically, while an appetite for consuming restaurant-type foods in the home has grown.

### Efficient processing

While there may be opportunities that processors are yet to fully explore, if a market for further processed meat is to be grown, it is important that processed yields are as high as possible in order to add value to the total operations of the plant, said Morten Dalqvist, Marel product manager portioning.

There are various ways portioning lines can be set up, for example ranging from a single portion cutter that can be scaled up to full-scale solutions integrated into the end of the deboning line. Similarly, there are a variety of options where coatings and heat treatments are concerned.

### Green credentials

Making better use of leg meat may not simply be a case of improving processors' bottom line, it may offer much broader benefits. As global demand for meat rises, it will be important to use all resources – including as much of the broiler carcass as efficiently as possible – and as companies' green credentials come under greater scrutiny, efficient use of inputs and less wasteful outputs will become more important. ■



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## Poultry International

## Sales Team

**Frans Willem van Beemen**

Tel: +31 344 653 442

Fax: +31 344 653 261

fvanbeemen@wattglobal.com

**Tineke van Spanje**

Tel: +31 495 526 155

Fax: +31 495 525 126

tvanspanje@wattglobal.com

**Dingding Li**

Tel: +86 137 640 39062

Fax: +86 21 541 33676

dingdingli@vip.163.com

**Pam Ballard**

Tel: +1 815 966 5576

pballard@wattglobal.com

**Mary Harris**

Tel: +1 815 980 5938

mharris@wattglobal.com

**Jeff Miller**

Tel: +1 815 966 5582

jmiller@wattglobal.com

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