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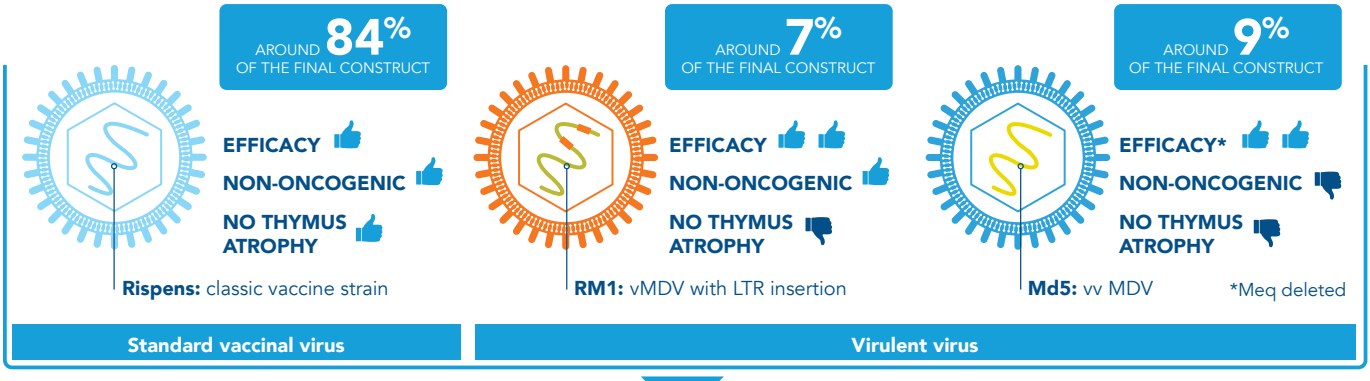

Vaccine strain RN1250

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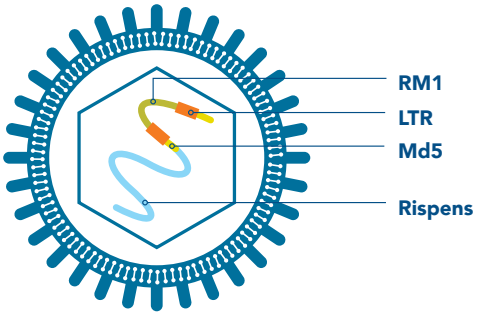

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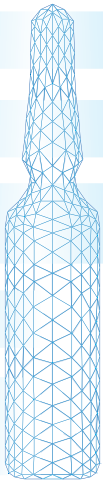

36-months shelf-life

BIBLIOGRAPHY:
1. Stdy 17.0128.R, Boehringer-Ingelheim, 2017, 2. Poultry non-pivotal study PNPS-20-002, Boehringer-Ingelheim, 2020.

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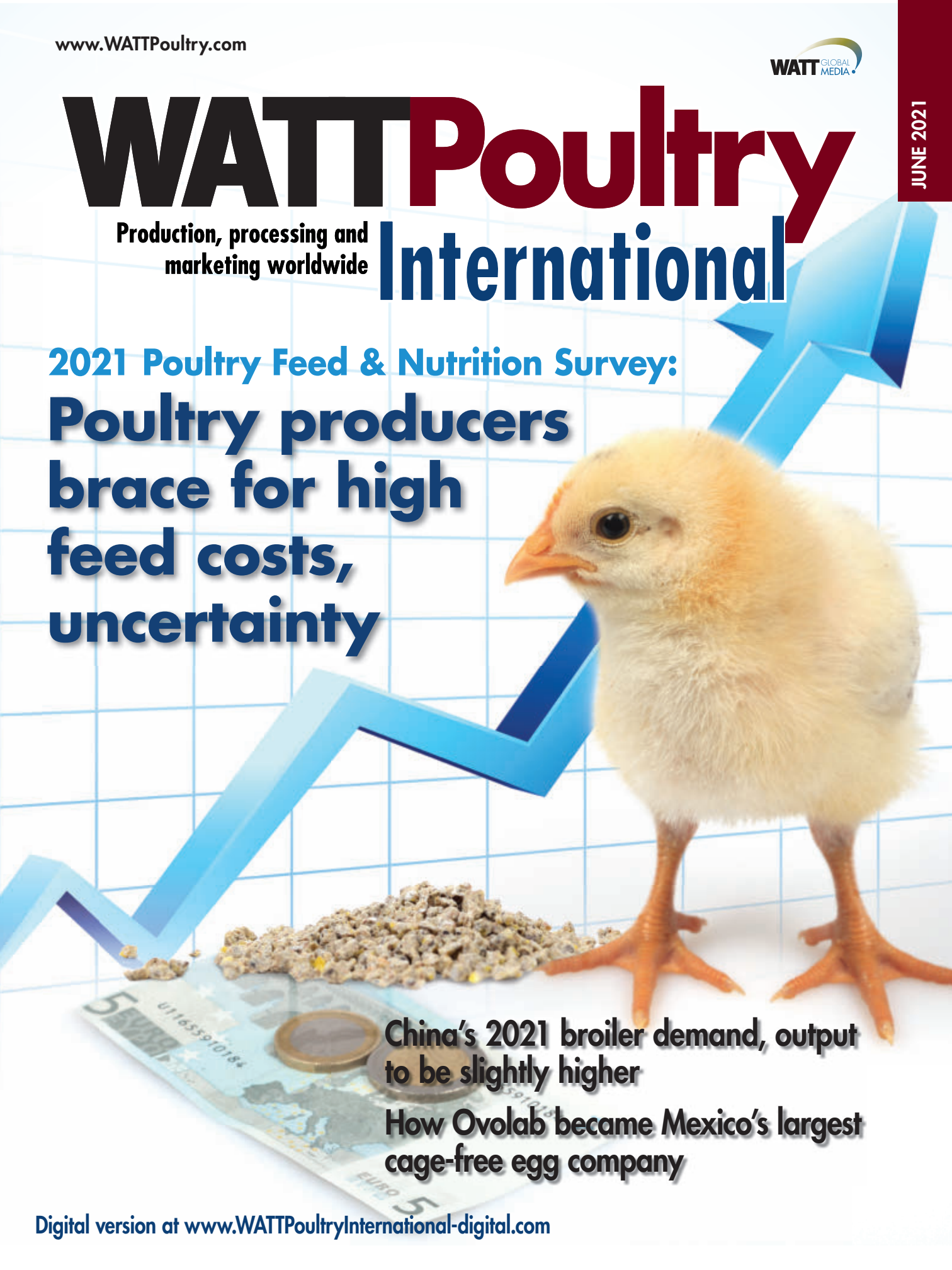
2021 Poultry Feed & Nutrition Survey:

Poultry producers brace for high feed costs, uncertainty



China's 2021 broiler demand, output to be slightly higher

How Ovolab became Mexico's largest cage-free egg company

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Cover Story

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WATTPoultry® International

EDITOR'S COMMENT BY MARK CLEMENTS

A game of two halves

Our cover leads with our exclusive Poultry Feed & Nutrition Survey. The results of our annual questionnaire reveal that there is optimism in the industry but a degree of caution too.

COVID-19 continues to be a concern and it has been joined by grain price volatility. Antibiotic-free production and alternative additives also continue to cause some disquiet but there is, at least, some optimism looking to the year ahead. Where all important profitability is concerned, this optimism may be less than in previous years but 40% of respondents believe that it will be higher, while 33% think that it will be flat.

Perhaps the nation currently with most optimism is China. Like other countries, its animal protein industries are being affected by rising feed costs but, by year end, broiler production in the country is expected to be 3% higher.

Not such a favorable outlook is forecast for Ukraine, our second destination in the issue. The country would appear to have lost its second-largest broiler producer and been hit by disease outbreaks. Like China, the country started the year in a poor position, but Ukraine is expecting to see disruptions continue as 2021 progresses.

We also look at how egg production in some far-flung markets has risen over the last decade and focus in on a Mexican producer that successfully spotted the trend for cage-free production before it reached the Mexican shore and has ridden a wave to lead the segment.

One thing leads to another

As ever, we have a rich nutrition section in this issue. Luis Romero examines how antibiotic-free production has fostered collaboration and innovation while in our Poultry Future slot we look at one such innovation in development in Australia. We also look at emerging nutritional solutions for coccidiosis.

Last, but not least, in our regular visit to the poultry processing plant, we ask whether worker engagement can increase yields. With staff closer to daily operations than managers, delegating responsibility may well result in problems being identified more quickly along with the right solutions. ■

@ Follow Mark Clements in his blog
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Roy Graber

2021 Poultry Feed & Nutrition Survey

Poultry producers brace for high feed costs, uncertainty

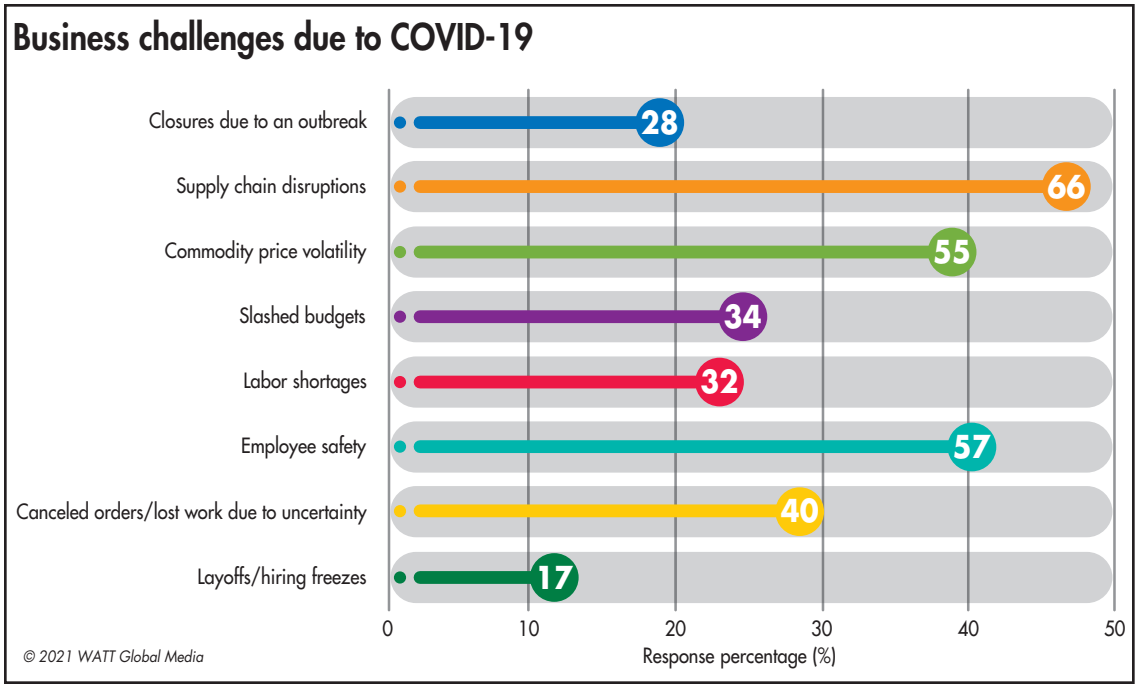
Poultry, feed industry survey respondents are cautiously optimistic about business in 2021, but also preparing to bear challenges ahead

JACKIE ROEMBKE

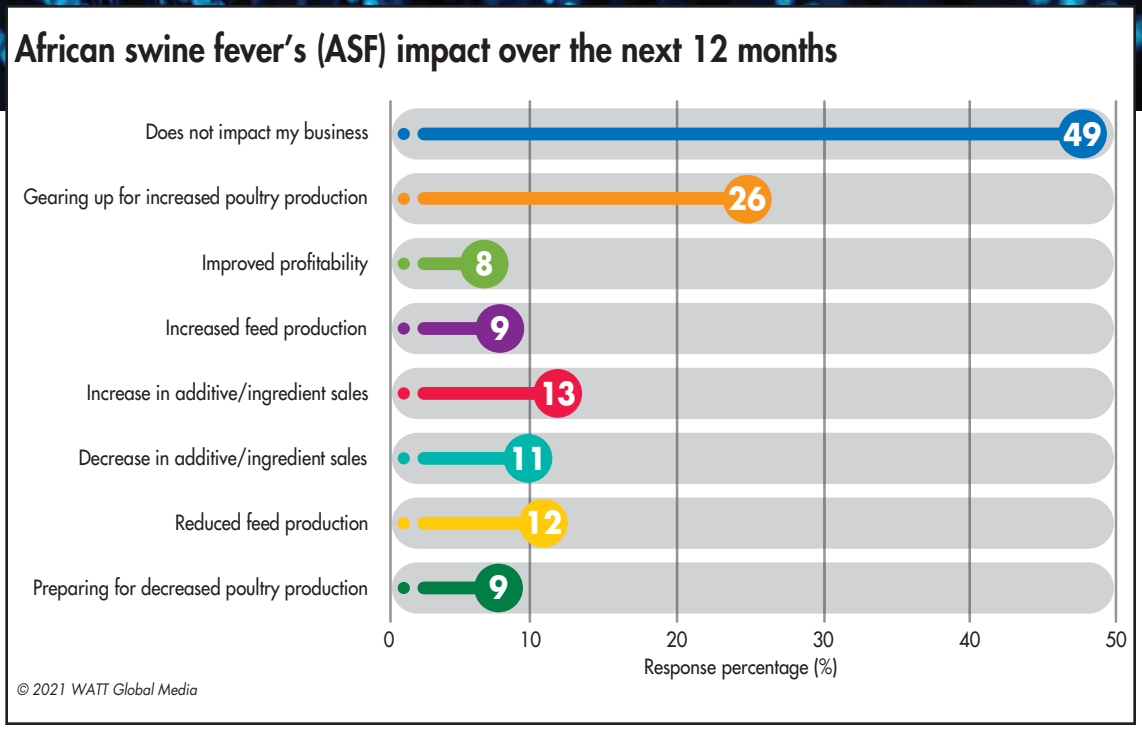
WATT Global Media's annual Poultry Feed & Nutrition Survey offers a firsthand look at the macro trends impacting the poultry industry worldwide, providing a glimpse into the ways poultry producers, nutritionists and feed manufacturers are adapting to these changes and challenges.

The 2021 edition of the survey includes input from 560 respondents from around the world. More than half of survey participants are nutritionists, consultants and veterinarians; 16% work in live production management or own a poultry farm.

Dominating the discussion this year are the lingering effects of the COVID-19 pandemic and grain price volatility. However, evergreen issues, such as the



Aside from the employee safety challenges (57%) posed by the COVID-19 pandemic, supply chain disruptions (66%), commodity price volatility (55%) and lost business (40%) further taxed poultry and feed companies in 2020.



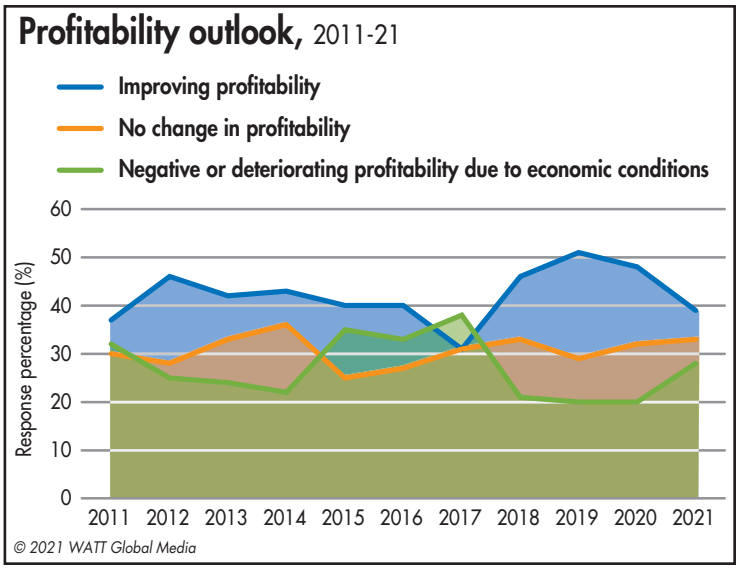
Most survey respondents report being unaffected by the African swine fever (ASF) outbreak, but 26% think it will be the reason they ramp up poultry production in 2021.

challenges of antibiotic-free (ABF) poultry production and feed additives alternatives for antibiotic growth promoters (AGPs), remain hot topics.

The impact of COVID and ASF

When asked about the main difficulties their company faced in 2020 due to the COVID-19 pandemic, survey respondents (66%) cited that supply chain disruptions posed the greatest challenge to their business. In addition, the struggle to keep employees safe by securing personal protective equipment (PPE) and establishing social distancing procedures ranked as the second biggest obstacle (57%).

Commodity price volatility



Less than 40% of survey respondents are optimistic about their company's 2021 profitability, a 10% dip from 2019, the exact amount that shifted to reflect a negative revenue outlook.

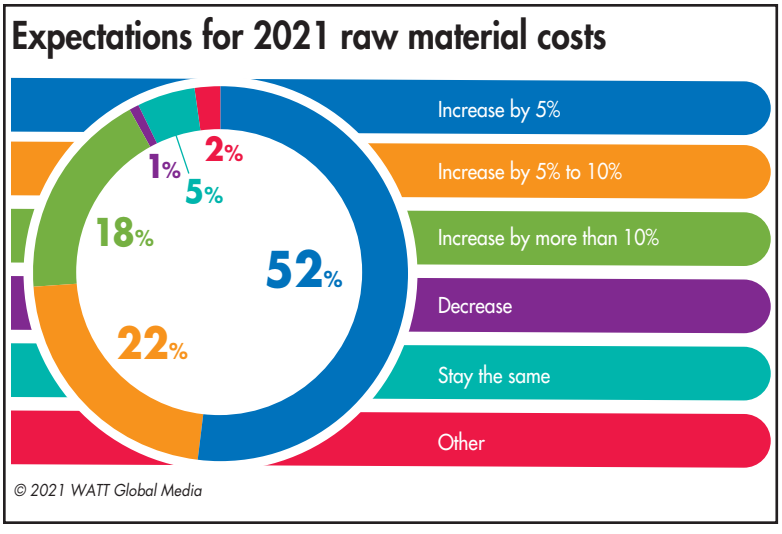
@ 2021 Poultry Feed Outlook:
Prepare for market volatility: bit.ly/3rFAqBL

2021 Poultry Nutrition & Feed Survey

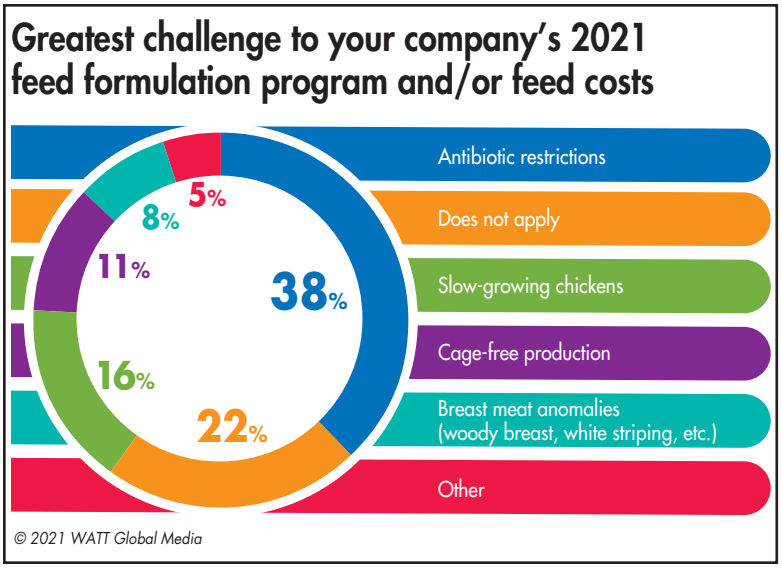
(55%), lost work or canceled orders due to market uncertainty (40%) and slashed budgets (34%) rounded out the respondent's top 5 COVID-related stressors.

In 2021, 38% of survey participants believe their feed production will increase, and 40% feel it will stay the same as in 2020.

Twenty-six percent of respondents believe the continued fallout from the African swine fever (ASF) virus, which has plagued Chinese and Southeast Asian pig herds since mid-2018, will be the reason they ramp up their poultry production in 2021; 13% feel it will result in increased feed additive sales this year. Meanwhile, 12% believe ASF will be to blame for their decreased 2021 feed production.



Thirty-eight percent of respondents believe new material costs will increase by 5% to 10% in 2021 and 32% anticipate increases of 10% or more. Virtually none of respondents (>2%) expect grain prices to decrease.



Antibiotic reduction and elimination efforts continue to be the No. 1 production trend to challenge feeding programs.

2021 profitability outlook

Coming off 2020, survey respondents have a much less optimistic outlook for the year ahead than in previous editions of the survey, with less than 40% believing profitability will improve, 28% bracing for deteriorated profitability, and 33% feeling profits will remain flat. This is compared with 2019, for example, when more than 50% of respondents felt profitability would improve.

When asked to weigh in on the primary challenges their business faces in 2021, 85% cited the cost of grain and its quality (68%) as two of their top concerns. In fact, 38% of survey respondents anticipate their grain costs increasing by between 1% and 5% in 2021; 32% fear they will increase by more than 10% this year. Only 8% are optimistic they will stay the same as in 2020.

Sixty-three percent of respondents believe rising feed additive and micro-ingredient prices will become their No. 3 biggest challenge, which likely relates to supply chain risk (60%), one of their top No. 4 greatest concerns. Tied for fourth place, poultry and feed

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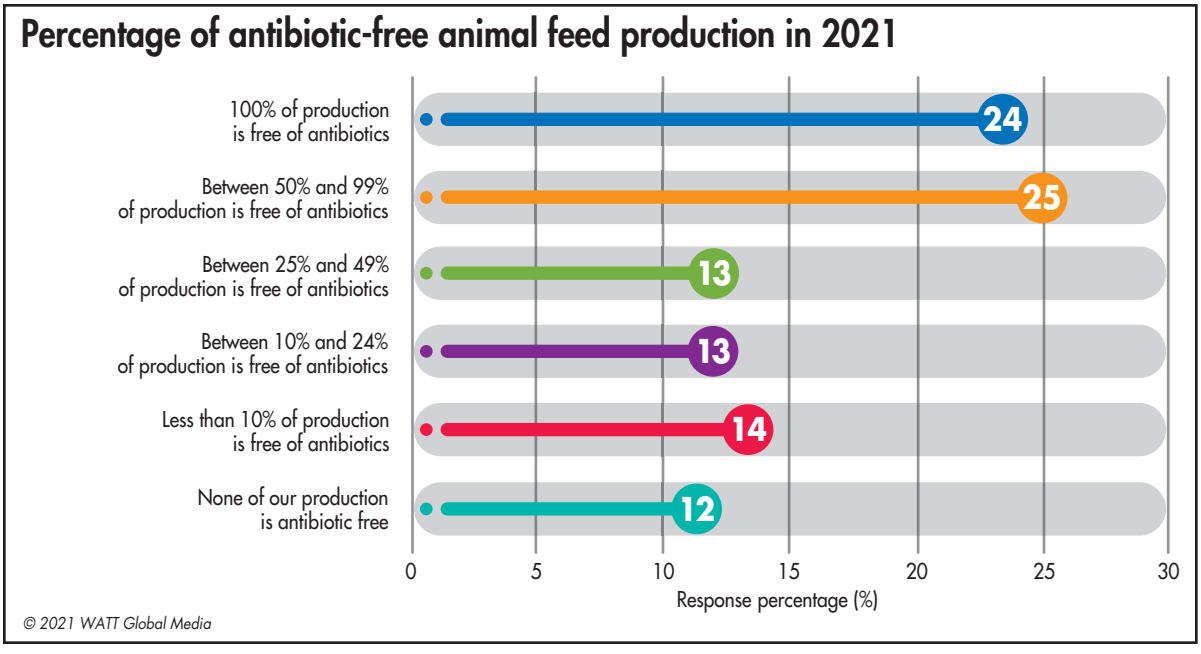
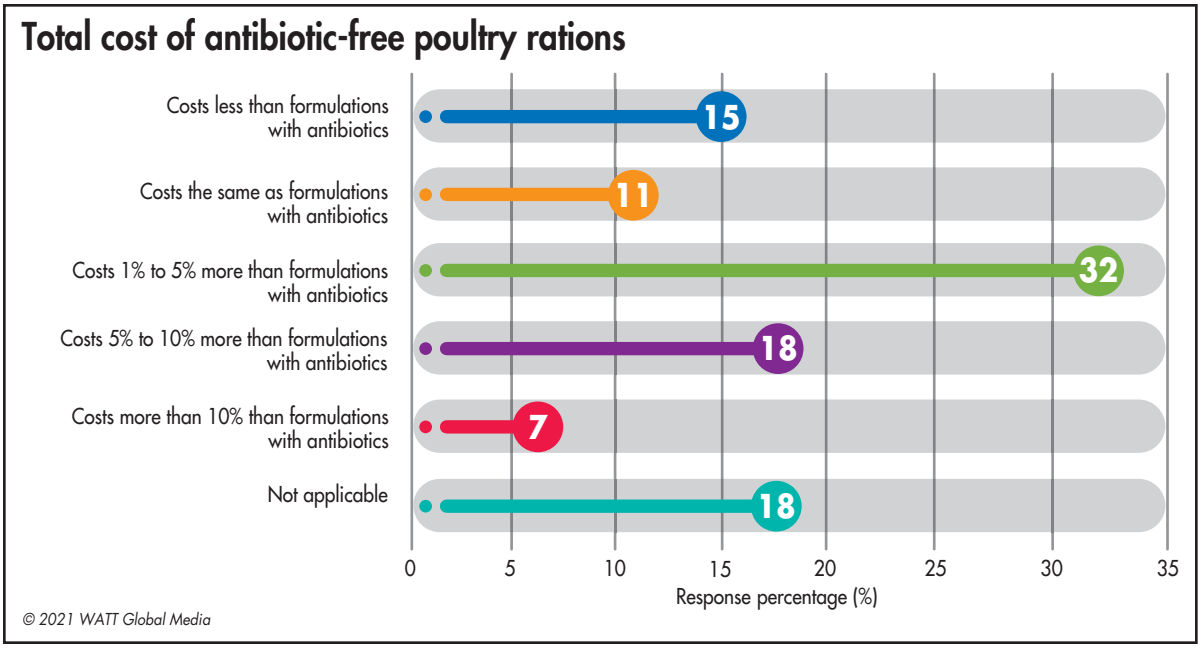
producers foresee tightened or deteriorating margins (60%) on the horizon this year.

Antibiotic reduction, elimination challenges

Asked to identify which poultry production trends have the most significant impact on their feed costs and formulation programs, 38% of



Twenty-four percent of respondents report their operation(s) being 100% antibiotic free; 25% say between 50% and 99% of their poultry production is free of antibiotics.



Most respondents (32%) report moderate increases to feed costs — 1% to 5% — when formulating antibiotic-free rations; 18% cite cost increases between 5% and 10%.

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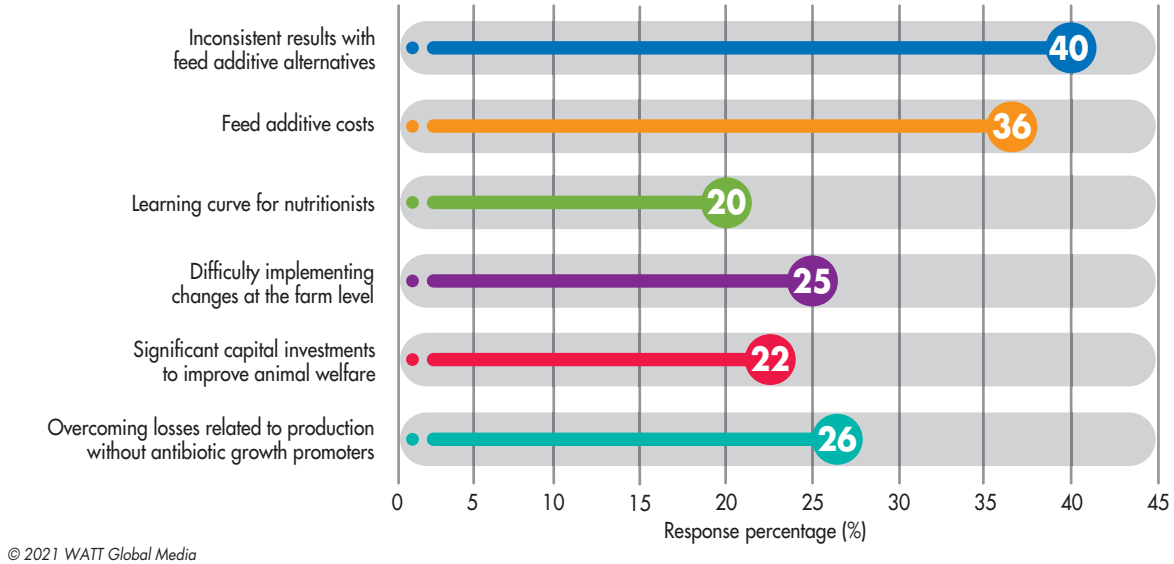
2021 Poultry Nutrition & Feed Survey

Greatest challenges faced in antibiotic-free poultry production



Unreliable antibiotic alternatives, high feed additive costs and overcoming the losses related to AGP-free production continue to challenge poultry producers who have reduced or eliminated their antibiotic usage.

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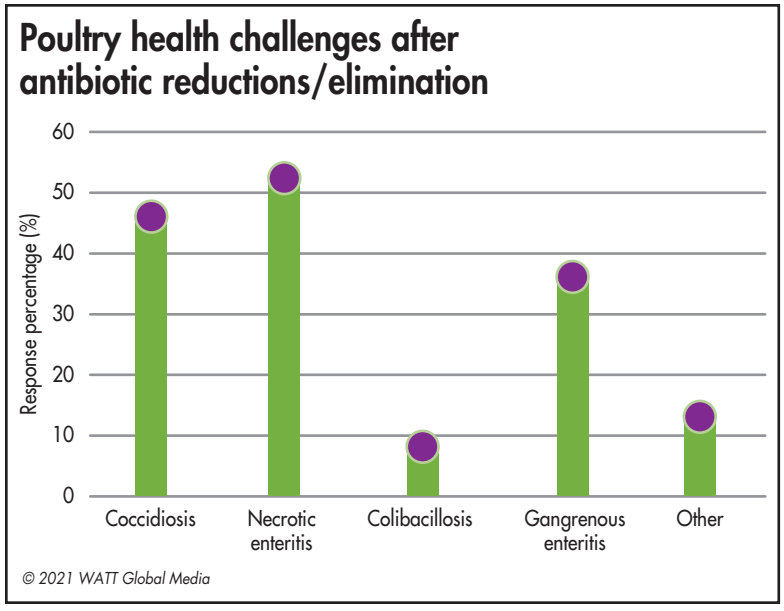


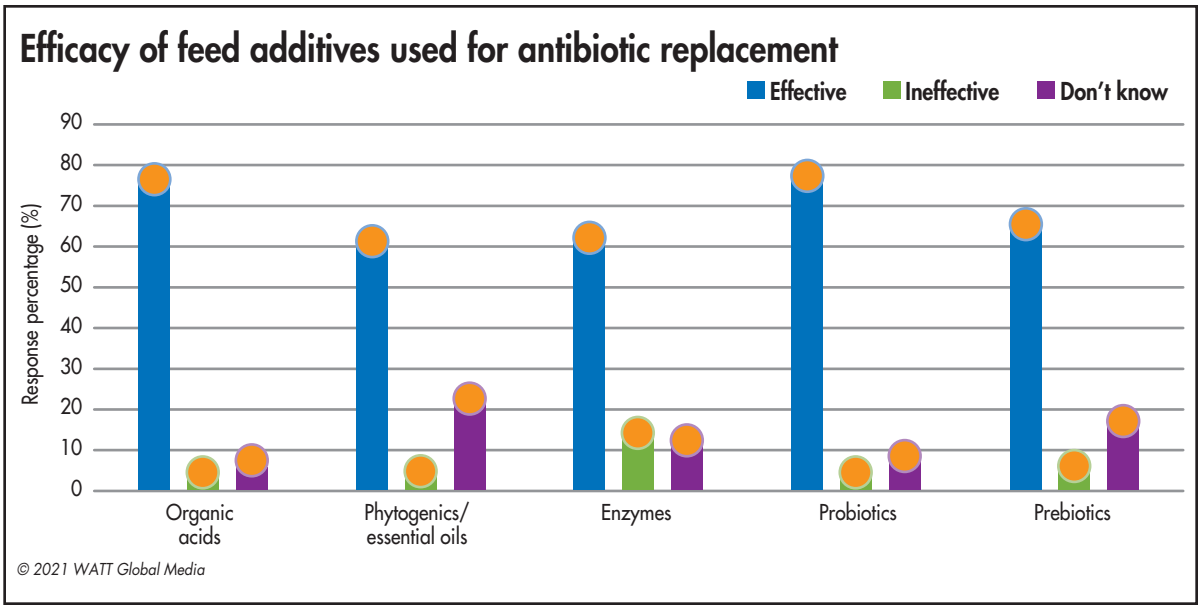
Respondents note increases in necrotic enteritis (55%) and coccidiosis (49%) in their flocks once antibiotics were reduced or eliminated from production.

respondents cited antibiotic restrictions as their No. 1 production challenge in 2021 and 16% point to slow-growing chicken production.

Eighty-eight percent of 2021 survey participants report having some degree of ABF production in their poultry operations, with 24% stating that 100% of their production is ABF.

According to 32% of respondents, ABF poultry rations cost between 1% to 5% more than traditional formulations; 18% say their costs for ABF feeds have increased by 5% to 10%. In contrast, 15% note that their company's formulations actually cost less without them; and 11% say it stayed the same.

In their opinion, the No. 1 challenge in making the transition to ABF poultry production can be attributed to the inconsistent results they have experienced with feed additive alternatives (40%). In addition, the cost of feed additives (36%), the losses related to the elimination



Probiotics and organics acids — when used alone or in combination with other additives — rank highly as effective solutions in antibiotic-free diets. Eighteen percent feel enzymes are ineffective as an AGP replacement solution.

2021 Poultry Feed & Nutrition Survey

Survey response breakout

The 2021 Poultry Feed & Nutrition Survey includes input from 560 poultry and feed industry stakeholders worldwide. This WATT Global Media special report seeks to identify the feeding and external trends shaping these sectors during the last 12 months. It was conducted in English and Spanish.

Participants included:

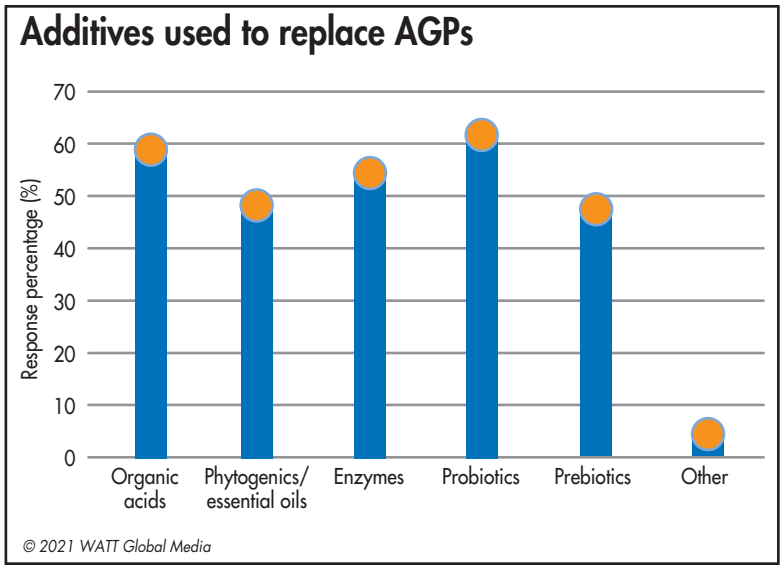
- Nutritionists: **26%**
- Consultants: **13%**
- Veterinarians: **18%**
- General administration: **5%**
- Poultry farm owner/grower: **9%**
- Live production management: **7%**
- Marketing and sales: **10%**
- Feed mill/plant operations: **3%**
- Quality control, purchasing agent, other: **9%**

Responses from:

- Latin America: **38.5%**
- United States/Canada: **17%**
- Asia/Pacific: **18%**
- Europe: **12%**
- Africa: **10%**
- Middle East: **4.5%**

Sectors:

- Consultant/ veterinarian/nutritionist: **32%**
- Broiler production: **13%**
- Feed manufacturing: **15%**
- Egg production: **10%**
- Manufacturing/distributing feed additives: **10%**
- Breeder farm/hatchery: **6%**
- Premix manufacturing: **5%**
- Turkey/duck production: **1%**
- Poultry processing: **1%**
- Other: **7%**



As part of their AGP replacement strategy, respondents report utilizing and/or combining probiotics (64%), organics acids (61%) and enzymes (57%). Fifty-one percent include phytogenic feed additives.

of AGPs and the difficulty implementing changes on the farm level (25%) further complicate the effort.

Since eliminating or reducing antibiotic usage in their poultry feed, respondents cite increased incidents of necrotic enteritis (55%), coccidiosis (49%) and Gangrenous enteritis (39%).

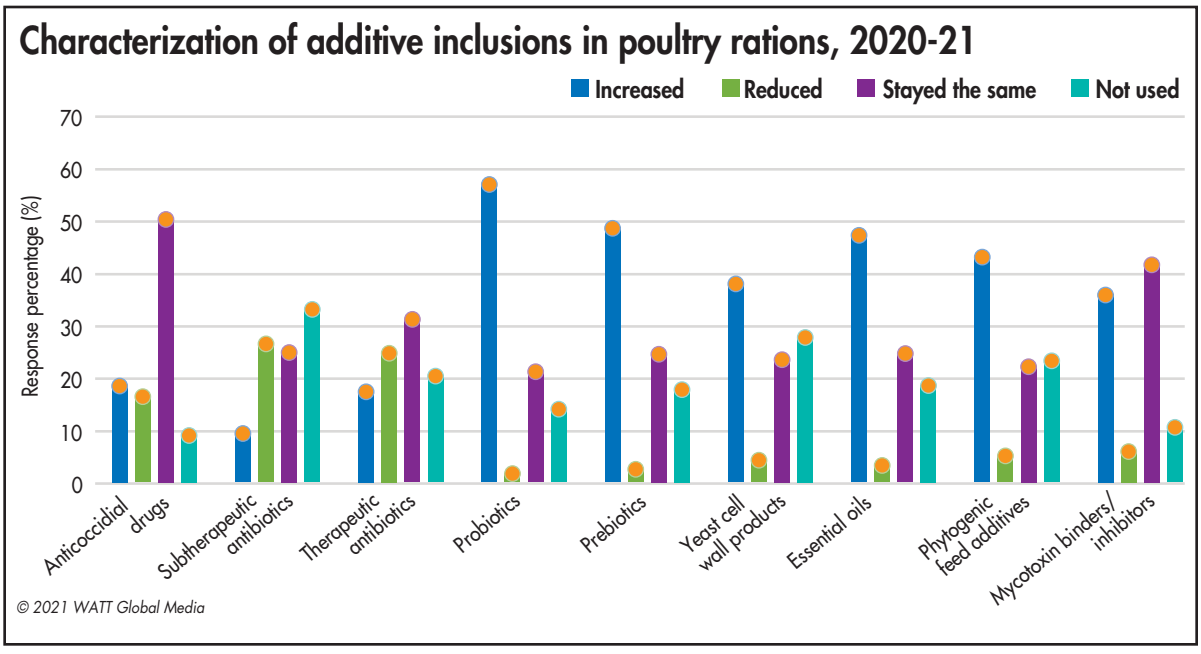
Exploring AGP alternatives

Seventy-three percent of respondents report that their company is actively exploring, testing or using feed additives as antibiotic alternatives or replacement solutions.

In an attempt to recapture the production gains AGPs provided, survey respondents incorporate different feed additives into their rations to bridge the gap. Probiotics (65%) and organic acids (62%) ranked as the most popular AGP alternatives, followed by enzymes (58%) and phytogenic feed additives (51%).

Respondents found organic acids (81%), probiotics (81%) and prebiotics (69%) to be the most effective feed additives alternatives for in-feed antibiotics. Phytogenic feed additives and essential oils were deemed effective by 65% of respondents; however, 27% felt they could not comment on the efficacy of the category.

Comparing their outlook for 2021 inclusions against 2020, respondents will increase their use of probiotics (59%), prebiotics (50%) and essential oils (49%) this year. Twenty-eight percent will decrease their use of subtherapeutic and therapeutic (26%) antibiotics. ■



Survey respondents report plans to increase their use of probiotics (59%), prebiotics (50%), essential oils (49%) and phytogenic feed additives (44%) in 2021.

China's 2021 broiler demand, output to be slightly higher

The increasing return to normality in the Chinese market will help to support the broiler industry, but producers are not without their difficulties.

MARK CLEMENTS

The continued return of the quick service and other catering channels will help to support China's poultry industry this year.

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China's poultry industry will continue to expand this year, but at a lower rate than last, while consumption will also be slightly higher.

Chinese broiler meat production is forecast to rise by almost 3% this year, held back by higher feed prices, lower chicken meat prices and a recovery in the swine industry, reports the U.S. Department of Agriculture Foreign Agricultural Service.

Production growth will not, however, be evenly shared across the country's white and yellow feather industries. While growth is predicted for white feather birds, the demand decline for yellow feather birds is expected to continue.

Poor start

The Chinese industry started 2021 with falling prices, rising costs and abundant supplies. According to the country's National Bureau of Statistics, prices for live birds fell by 7.1% in 2020.

2020 saw an abundant supply of poultry meat and, as in much else of the world, the closure of the hotel, restaurant and institutional sectors. This, according to the National Bureau of Statistics, saw prices for live birds decline by 7.1% over the year.

While prices for broiler meat weakened, input costs rose. China suffered severe weather events affecting its corn crop. This, combined with similar events overseas, and renewed competition for feed from a recovering swine industry, drove feed prices higher.

Larger producers may have been able to cope with falling prices and rising input costs, but, some smaller producers faced bankruptcy. In an attempt to help the poultry industry become more robust, the government announced a number of modernization initiatives. In the second half of 2020, however, the industry cut chick production to record lows, helping chick prices to rebound.

Within the white feather sector, larger producers are expected to make efficiency gains this year through vertical integration. However, those producers who work directly with slaughter and processing businesses have been cutting back and facilities have been running below capacity.

For yellow feather birds, while forecasts vary, supply is expected to continue to exceed demand

@ China's poultry sector to be stronger post COVID-19
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resulting in further reductions in output. Weakening demand for yellow feather birds is being driven by closure of live bird markets and a shift toward packaged broiler meat. Last year, demand for yellow feather birds is thought to have fallen by approximately 10%.

Production of hybrid birds is expected to grow by 10% in 2021.

Changing demand patterns

China is expected to close all live bird markets within 10 years.

This ongoing closure, combined with COVID-19 restrictions, has changed, and continues to change, Chinese consumers' purchasing.

Online and home delivery channels have grown, supported by a number of novel approaches to keep consumers loyal in the face of disease control restrictions, and this growth is expected to continue as the country returns to normal.

Demand from the hotel, retail and institutional sectors, already back to normal in some areas and reporting an upturn, will also support demand for chicken, as will the return of quick service restaurants, which continue to expand their presence in China.

The foodservice sector, with its strong demand for chicken, may be in recovery, but as 2021 continues more recovery will come in swine. With pork being China's favorite meat, this recovery will be to the detriment of the poultry industry.

Imports and exports

Domestic production will outpace rising consumption levels, which is expected to result in imports falling nearly 16%. In 2020, poultry meat import volume doubled across most products. Given this strong increase, coupled with weak 2020 prices, a decline is little surprise. China's chicken exports are forecast to rise by 3%, principally in response to growing demand from Japan, China's main chicken export market. ■

2021: Mixed fortunes for Ukraine's poultry producers

Shrinking margins and constrained exports have impacted Ukraine's poultry industry, but for those producers able to survive there may be better times ahead.

MARK CLEMENTS

Ukraine is likely to see chicken meat production and chicken exports decline this year, reversing a five-year trend which saw both rise.

Like producers around the world, the Ukrainian industry entered 2021 under the impact of COVID-19. The virus, however, has affected the Ukrainian economy far less than it has many Western economies. Instead, outbreaks of Highly Pathogenic Avian Influenza (HPAI), weak prices, rising input costs and the loss of its second-largest poultry producer have been changing the Ukrainian market.

This year's expected poorer performance can be traced to difficulties that began to hit the industry at the start of 2020.

MHP, the country's largest broiler producer completed a major expansion in 2019, and its output rose significantly the first six months of the year. However, as 2020 started an outbreak of HPAI curtailed access to export markets. 2020 ended the same way with further outbreaks of HPAI.

MHP reports that its volumes for 2020 were stable in comparison with the year before, with operations returning to full capacity from the end of the first quarter. The company continued exporting to its major markets, but not to the European Union (EU), which has been Ukraine's main export destination.

With the country's largest producer running at capacity but with reduced access to export markets, the first half of 2020 saw a significant decline in chicken prices, resulting in some producers putting product into cold storage. While prices increased between October and December, it was not enough to offset the increase in feed prices from the start of September, reports the U.S. Department of Agriculture Foreign Agriculture Service.

Export prices are also reported to have risen slightly by year end, but only by a modest amount and not enough to help

@ Ukraine's poultry production, exports to end 2020 higher
www.WATTPoultry.com/articles/41150

Ukraine will remain a major exporting country and regaining access to the European market for the country's HPAI-free areas, should help to alleviate some of the industry's difficulties.

Patrick Foto | BigStock.com

squeezed producer margins. Consumption of chicken meat on the home market is thought to have risen only marginally last year.

The country's second-largest producer, Agromars, appears to have not survived the Ukrainian industry's changed operating conditions. Reportedly burdened by heavy debt, the company began decreasing production last year before stopping altogether in December. Many of its farms went up for sale this March.

Exports

Ukraine's exports reached a record high last year, but restrictions due to the country's HPAI outbreaks saw the Middle East overtake the EU as the country's main export market.

The new outbreaks and restrictions toward the end of the year, and a lack of regional recognition by the EU, caused exports to that market to stop.

However, there has been some recognition of regionalization by other importing markets. This allowed the country to significantly increase exports to Kuwait, the United Arab Emirates and Saudi Arabia. Demand for Ukranian product also grew strongly in Central Asian countries that were formerly members of the Soviet Union.

Given the increase in demand from these markets, the HPAI outbreaks have had a limited impact on total exports.

Outlook

According to the State Statistics Service of Ukraine, over the 12 months to February the number of poultry on farms declined 9%. This was mainly due to cutbacks in commercial enterprises, where the flock declined 14%.

However, Ukraine is expected to remain a significant exporter of chicken meat and, in March this year, it agreed with the EU that exports could resume from parts of the country unaffected by HPAI.

Feed prices are expected to remain high. While smaller producers have cut production leading to some increase in prices, this is not expected to be enough to offset higher input costs and disruptions in the market are expected to lead to increased imports for some products.

Weak prices and higher input costs have squeezed margins. *kjpargeter | BigStock.com*

The demise of Agromars, which held 7% of the market, may offer some opportunities for other producers in the country, but with demand for chicken stable at home and difficulties in export markets remaining, Agromars' assets may not be that attractive.

Of perhaps further difficulty for the local industry, in March the government listed poultry as a "good of social importance." According to Reuters, the government has entered into agreements with a number of food producers' associations to keep domestic prices stable for popular food items to stave off inflation. Food prices rose by more than 7% over the first two months of this year, with eggs being among those foods recording the sharpest price increases. Given poultry's classification, margins are likely to remain tight for the months ahead. ■

GUEST EDITORIAL BY VINCENT GUYONNET, DVM, PH.D.

Global egg production records a decade of strong growth

The world's egg producers have seen output rise by almost a third over the last 10 years.

Each year, the release of a fresh batch of data from the United Nations' Food and Agriculture Organization (FAO) is an opportunity to review the global egg sector's progress and to celebrate the achievements of a few far away countries not always known for their egg production.

Between 2009 and 2019, the egg sector grew by 32.7%, ahead of all other terrestrial animal production except chicken meat (+42.2%).

With additional production of 20.6 million metric tons of eggs, the global industry has been able to provide, on average, each individual on our planet with 45 more eggs over the period or about 2.7 kg of eggs.

This increase, however, is not evenly distributed across nations.

Of the 195 countries and territories reported in the FAO database, egg production increased in 145, decreased in 49, and remained flat in one, the island nation of Dominica. Dominica, sandwiched between Guadeloupe and Martinique in the Caribbean Sea, is home to 72,000 people and about 20,000 hens. Annual consumption in Dominica is about 72 eggs per person, at a par with India (77 per person) but well below the world average of 168.

Mexico continues to record the highest *per capita* egg consumption with 372 eggs, up by 17 over 10 years. The same 17 eggs represent about twice the annual *per capita* consumption in Ethiopia.

China's growth continues

In what has become a tradition since the mid-1980s, China (+5.1 million tonnes) again drove global growth, adding more eggs than the combined efforts of 129 nations that also grew over the period.

Where percentage increase over the decade is concerned, the top award again goes to the Kingdom of Bhutan. The mountainous landlocked nation, between India and China, saw its production increase by 793%.

Mongolia (+418%) and Kuwait (+286%) complete the list of top 3 nations by percentage increases. Overall, 67 countries, from all continents, grew their egg production at a rate above that of the 32.7% global

The Vietnamese egg industry was amongst the best performing in 2018-2019.

Vincent Guyonnet

average. Some of the largest production decreases, however, were reported from countries with a tradition for egg production, Venezuela (-19.1%) and Syria (-24.3%), both devastated by political turmoil.

When comparing 2018 and 2019, the global industry grew by 3.5%, adding 2.8 million tonnes of eggs to the food supply — or slightly more than Japan's entire annual production.

A total of 55 countries grew at a rate faster than the world average. In addition to São Tomé and Príncipe (+78.7%) off the Western coast of Africa, the Cook Islands (+77.8%), in the Pacific Ocean, added about

Egg farmers, not blockchain, key for consumer trust
www.WATTPoultry.com/articles/41952

1,600 hens to its flock to provide more fresh eggs for its 20,000 citizens. Equatorial Guinea (+47.9%), between Cameroon and Gabon, completed the list of the top 3 highest growth countries.

In one year alone, China added another 1.6 million tonnes of eggs — equivalent to the combined production of Spain and the UK — while India added 538,065 tonnes of eggs, the equivalent of the annual production of South Africa, home to 27.6 million hens. Overall, Asia, now home to 61.9% of global egg production, accounted for the bulk of growth, representing 83.1% of the total.

Next year, FAO data will account for the impact of COVID-19 and its disruptive effects on farming communities. Let's hope that the egg world has been able to cope and that the next report will continue to show progress toward providing great nutrition and income around the world. ■

Vincent Guyonnet, DVM, Ph.D., is a consultant to the poultry sector with a focus on international development.

Industria Avícola

How Ovolab became Mexico's largest cage-free egg company

Spotting a trend, Mexico's Ovolab ventured into cage-free production over a decade and half ago, and has established its presence in this niche market.

BENJAMÍN RUIZ

Ovolab is Mexico's largest cage-free egg producer verified by U.S. certification organization Certified Humane, allowing it to stand out from the competition.

Cage-free egg production is still a relatively new business area in Mexico and, as in many other Latin American countries, the market for cage-free eggs is small. So why did Ovolab, formed in 2015, opt for this small market segment?

"Six years ago we began to observe the trend for cage-free eggs in Europe and we knew that

Gallinamia is the company's new consumer-focused cage-free egg brand. *Courtesy Ovolab*

Rebeca Gutiérrez, Ovolab CEO, explains that the company spotted a trend in Europe for cage-free eggs and knew that demand would grow in the Americas. *Courtesy Ovolab*

it would come to the Americas," said Rebeca Gutiérrez, Ovolab CEO.

Gradual journey

While the company may now be firmly established in the consumer and business-to-business channels, Gutiérrez said Ovolab initially began with a small test flock of 8,000 brown layers, floor-raised, that started lay at 16 weeks.

"The learning curve was very difficult, because we didn't know what the actual production cost was," she said.

This was not the only difficulty, and a number of other issues had to be considered, for example the impact of the local climate.

The company is based about an hour and half's drive from Mexico City. Due to the altitude of central Mexico, which is 2,200 m above sea level, temperatures can increase from 2 C in the early morning to 30 C in the afternoon, which has a consequent impact on layer feed and water requirements.

Additionally, floor-raised hens need greater care in terms of husbandry and welfare, and the company opted for 100% vegetarian diets.

Staffing levels also needed to change. While only one person per 10,000 hens is needed on a traditional farm without automation, with cage-free production this number rises to 2.5-3, which increases the cost of producing an egg considerably.

Forced molting cannot be implemented as it would violate welfare requirements.

In short, Gutiérrez notes that there are three main elements that need to be kept in focus: animal welfare, cost consciousness and generating customer awareness of the added value of cage-free eggs.

The changing Mexican egg market

Mexico is the largest consumer of eggs in the world. Last year, each Mexican consumed 23.7 kg of eggs — or 377 eggs — and consumption continues to grow.

Interest is growing in cage-free eggs in the country, although the market remains small. According to data from the National Poultry Producers' Association (UNA) there are 167.3 million laying hens in the country, but only 6% of output is from floor-reared hens.

Given the country's high egg consumption it would be almost impossible for all eggs to be from floor-raised hens — there simply would not be enough space. However, as pressure from various sources mounts on the industry to produce more cage-free eggs, the sector will need to expand significantly.

Changing demand

Fortunately, during the first two years the company worked with cage-free layers, the market began to change in Mexico, with several multinational brands such as the Alsea restaurant chain, Bimbo Bakeries, biscuit company Gamesa and food producer McCormick, announcing a shift to sourcing cage-free eggs.

In response to this growing demand, Ovolab grew its flock incrementally to reach today's level of 120,000 birds.

"Today, we have 120,000 layers in floor production," Gutiérrez said. "Ovolab is thus the largest company in Mexico registered as a producer of cage-free eggs and certified by Certified Humane."

While the company may have mastered cage-free egg production, within the market, difficulties remain, particularly the lack of official standards.

Need for regulation

Only a few companies actually produce cage-free eggs; however, there would appear to be more brands of cage-free eggs in Mexican supermarkets than traditional eggs.

Gutiérrez was a member of the stalled committee preparing the Mexican Official Standard for cage-free eggs.

"It has been very difficult to agree with the big producers, as they are always comparing the cost advantage of traditional eggs over cage-free eggs," Gutiérrez said. "They cannot be compared. There is a market for the two types of product, and customers can decide what they want; we cannot stick to only one concept."

Because of this lack of standards, Ovolab decided to seek verifications and certification from entities such as Humane Society International (HSI) and Certified Humane.

"HSI verifies but cannot certify.

It visits the farms and then communicates with companies that want to purchase cage-free eggs," Gutierrez said.

HSI, which has international credibility, along with Certified Humane, support the company by offering consumer assurance.

Certified Humane, however, does offer certification.

"It takes about four months to be certified. But the organization leads you by the hand through the various requirements and it's worth it because it gives you credibility," Gutierrez said.

Ovalab has recently been certified by Certified Humane and is the only company in Mexico to have been recognized by it and by the HSI.

On farm

Stocking densities on Ovolab farms are 7 hens/m2, including nests, feeders and drinkers. Each bird consumes 120-125 g of feed and there are two nests for every 10 birds.

The company operates farms with two different production systems. Some birds are floor raised while others are raised on slats. Initially, use of slats was questioned due to cost. But the company analyzed the difference in the percentage of clean eggs produced and decided not to reject slat production.

While some eggs are now sold directly through supermarkets, 80% of eggs are sold under contract with a local company that processes them into dried egg for use in bakeries or mayonnaise production.

It is from dried egg producers where demand is particularly strong.

"There is a lot of pressure because, by 2025, some food producers, hotels and restaurants will no longer be able to use caged eggs," Gutierrez said.

Ovolab markets the brand, Gallinas Libres Naturalmente Sanas, or naturally healthy free hens, which is applied to bulk eggs sold in boxes of 360.

It has a second brand planned. Gallinamia, or my hen, will be sold in boxes of 12, 18 or in bulk. Once launched, this brand will be aimed at householders and younger generations.

To further resonate with younger consumers, and to build trust and transparency, the Gallinamia brand will soon adopt QR codes, with details of where eggs were produced. ■

@ Latin American egg industry needs new marketing channels
www.WATTPoultry.com/articles/42035

Benjamín Ruiz, former editor of Industria Avícola, is an international poultry and feed journalist and translator, focused on Latin America.

Improving broiler house disaster response, recovery plans

Use these suggestions to prepare for the next emergency or disaster – whatever it may be.

MARY JO DAVIS

Disaster response and recovery plans are designed to prepare for emergencies and disasters, helping everyone make better decisions during a crisis. Planning during noncrisis times can reduce financial losses and enhance worker safety and animal welfare when a disaster strikes.

Were you ready for the COVID-19 pandemic challenges?

The pandemic provided a perfect example of how unexpected events can impact broiler production. Over a relatively short period, workers became too sick to care for chickens, and processing plants had to close or reduce capacity to compensate for sick workers and distancing protocols.

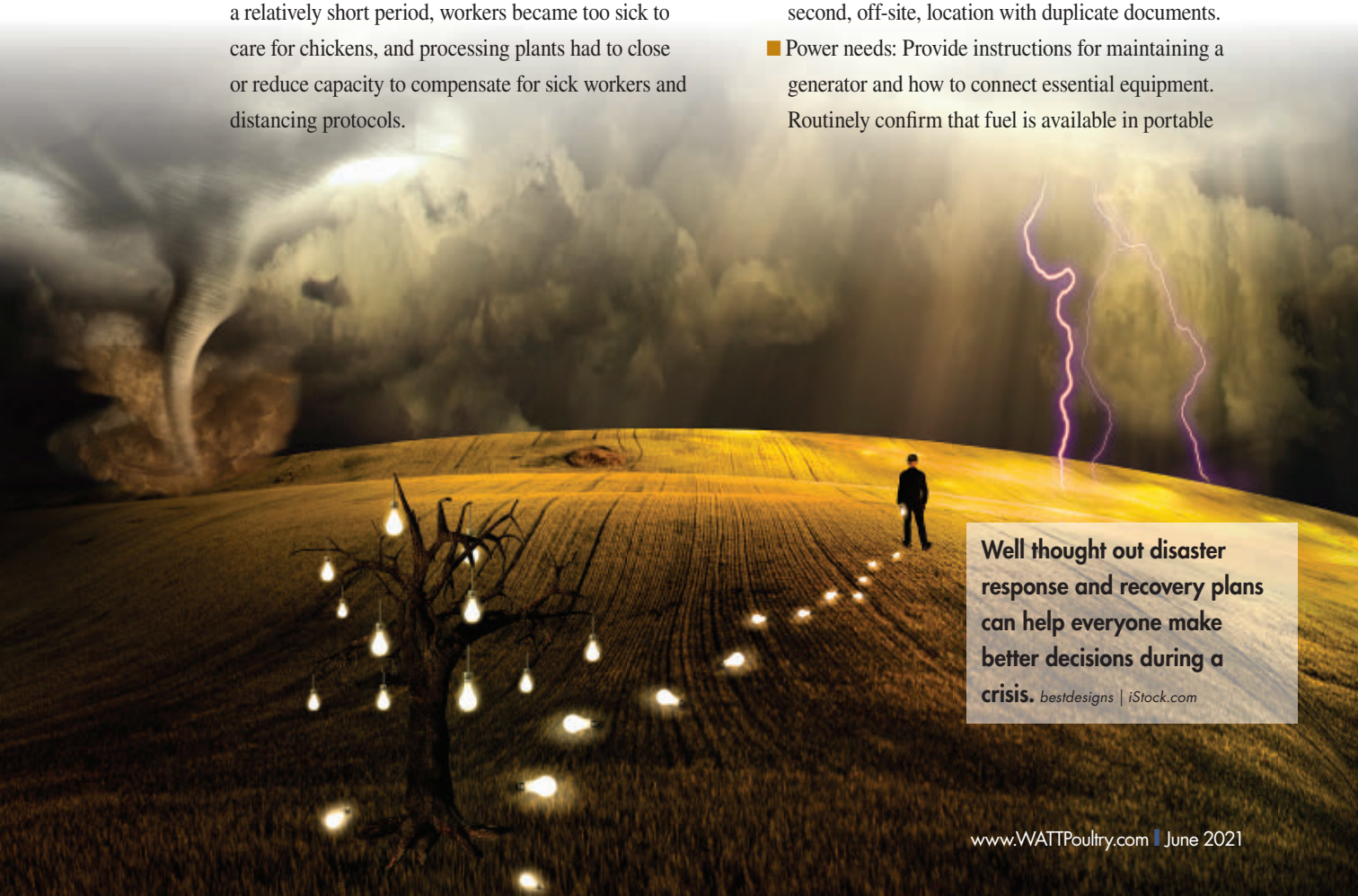
Use the following suggestions to strengthen or create disaster response and recovery plans for a broiler operation.

Planning to reduce disaster impact

Sometimes called risk mitigation, this process protects and prepares a facility for disasters.

Consider the following:

- Document storage: At the farm, create a waterproof, easy to find location for disaster documents. Have a second, off-site, location with duplicate documents.
- Power needs: Provide instructions for maintaining a generator and how to connect essential equipment. Routinely confirm that fuel is available in portable



Well thought out disaster response and recovery plans can help everyone make better decisions during a crisis. *bestdesigns | iStock.com*

gas tanks for all equipment, including supplemental heat sources for broiler houses recently stocked with chicks.

- Equipment readiness: Set up a regular maintenance schedule for equipment needed for daily operations as well as emergency equipment such as chain saws.
- Grounds preparation: Are drainage ditches free of debris? Is there an appropriate "clear" zone around the broiler houses? Are extra food and water protected from the elements? Schedule walk-throughs to confirm that items are stored properly, both inside and outside the houses.
- Create a checklist for documenting damage. Store the checklist and a digital camera with other documents.
- Schedule initial and refresher training sessions. Practice makes action easier during actual disasters.

Response planning

Responses during, and immediately after, disasters should focus on protecting worker health and safety, safeguarding flocks, and making initial repairs to facilities and equipment. Have the following information ready:

- Create emergency contact lists for the following: Animal care personnel, including at least one veterinarian; company and government contacts for reporting damage; local fire and other emergency personnel; and all staff members and families to confirm safety
- Create a map of the farm with the locations of all broiler houses and storage sheds.
- Animal care: Document activities needed to meet basic animal needs of food, water, ventilation, containment and veterinary care. To purchase supplies, have cash available or pre-arranged contracts with suppliers.
- Instructions for equipment: use simple language and pictures in case less experienced personnel need to carry out tasks.
- Designate methods and locations for salvage operations.
- Have a biosecurity plan in place. While imperative for disease outbreaks, a biosecurity plan is important for any disaster, since birds will be stressed and sanitation conditions will change.
- Create a depopulation plan. In large-scale commercial poultry farms, evacuation of broilers is not feasible. When birds are injured, basic supplies are unavailable, or people are unable to care for birds, killing broilers may be the most humane and economical option. Know regional and company guidelines for acceptable euthanasia methods.

Recovery is an opportunity to restore operations and prepare for future disasters. *deyanarobova | iStock.com*

- Create a carcass disposal plan: Methods for dealing with catastrophic animal losses include burial, composting, and incineration. Know the local guidelines for preferred methods and their environmental impact.

Recovery planning

During recovery, the focus switches to restoring farm operations to pre-disaster conditions. Disaster recovery includes repairing or rebuilding broiler houses, replacing equipment, and repopulating. Consider the following:

- Create and regularly update a farm asset inventory, so it is available for insurance, disaster relief and company reports
- Maintain a copy of the parent company's disaster

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policies and submit information promptly

- Be aware of government assistance programs available in the region
- Pre-plan for desired improvements, recovery is an opportunity to improve your operation and prepare for future disasters. Have information ready to move a broiler house to a safer area on the property or clear a larger area around the houses.

Planning for disasters should be an ongoing activity with routine reviews and training. By using nonemergency times to prepare, the impact of a disaster can be minimized, staff will respond more quickly and recovery time can be reduced.

Types of disasters

In addition to planning for human disease pandemics, take into account the following disaster types.

- Natural disaster: Weather events pertinent to your region, such as earthquakes, tornadoes, hurricanes, flooding, extreme weather and temperature.
- Poultry disease: Diseases highly contagious to other chickens and/or able to spread to humans.
- Infrastructure issues: Utility failure, technical failures, and fires that can be caused by accidents or deliberate acts, such as terrorism.

Regardless of the type, length and geographical spread of a disaster, the same basic planning elements remain. ■

Mary Jo Davis is a consultant with over 25 years in the animal health industry.

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GUEST EDITORIAL BY LUIS ROMERO

Cutting antibiotics in poultry production fostering innovation

Different countries are at different stages in their journey to antibiotic-free poultry production or production with prudent use, but common to all are new ways of working and flock management.

LUIS ROMERO

The ban on antibiotic growth promoters (AGPs) in the European Union in 2006 started a cascade of global events that, 15 years later, are still unfolding.

These changes are being driven by the worldwide recognition that anti-microbial resistance is a high priority public health issue.

Enormous systemic changes have been made to meet the challenge of responsible anti-microbial use, particularly in countries where consumers, government and the industry itself have demanded and embraced action.

This megatrend has been a fantastic spark for innovation along the entire supply chain from marketing and business models through to infrastructure, certifications, nutrition and health technologies.

Different countries may have taken different paths at different speeds in their transition, yet the responsible use of anti-microbials is now a must — much like a license to operate in a society that demands that animal production be more sustainable. Additionally, antibiotic-free production has now been extensively demonstrated to be compatible with high productivity.

A classical curve of technological change in gut health management has formed.

In the early phase of transition, an initial decline in

@ Will there ever be another feed enzyme like phytase?
www.WATTPoultry.com/articles/42179

Cutting antibiotics has accelerated innovation in poultry production. *Nerthuz | Bigstock.com*

gut health and productivity is countered with a wave of management and nutrition improvements and alternative gut health strategies. These changes can be temporarily reflected in higher production costs.

However, after this transition phase, productivity levels become increasingly competitive and focus shifts to optimization. Subsequently, a new normal is achieved and new concerns take center stage.

The process has been completed in part of the world, while many countries are still in transition, adapting to new regulations or to the early development of an AGP-free chicken market.

The new gut health

A consequence of this global transition has been a profound change in how the poultry industry views intestinal health, and a more holistic approach to nutrition and health has emerged.

When AGPs are removed from production their replacement is not another product. Instead, a set of decisions and systems to address the various challenge

sources and to protect the gut structure and function are being adopted.

Interrelated factors, such as fat quality and amino acid balance in diets, the environmental control of poultry houses and mycotoxin control, among others, are all now understood to form part of the gut health puzzle. Piecing the puzzle together means the difference between failure or success.

Close collaboration between nutritionists, veterinarians and production managers is now seen as critical by those companies that have spearheaded change. It is knowledge and collaboration that hold value when easy-to-use tools are no longer an option.

Completing the picture, a new generation of professionals who are more data driven than their predecessors and who have a more modern understanding of physiology and microbiology are now starting to reach positions of influence.

This, however, is still not the global picture, as parts of the world have not fully transitioned. Yet these new ways of thinking are gaining momentum. Innovative companies, regardless of regulations, are adopting production systems that address the new need for gut health, and they have plenty of tools and experience to draw upon.

The last miles in the journey to the new gut health paradigm will see further innovation. The challenge will be to develop solutions that fit local realities and producers' needs in low-income countries with limited infrastructure.

A proactive effort to complete the global transition to responsible use of anti-microbials is not simply the right thing to do but is also a great opportunity for innovators. ■

Luis Romero is the managing director of anh-innovation, a consultancy specializing in innovation strategy and new product development in animal nutrition and health.

Waste product could replace antibiotics in layer hens

XOS has already been studied in broilers, improving both gut health and production.

ELIZABETH DOUGHMAN

hurricanehank | BigStock.com

Researchers at the University of New England in Australia are studying the effects of a prebiotic made from waste products from milling on the gut health of egg-laying hens.

Commercially raised poultry feed traditionally contains enzymes that helps the birds better digest and break down the long-chain sugars found in grain into more desirable forms, such as xylo-oligosaccharides, also known as XOS.

The pilot project will examine the effects of XOS when it is added directly to feed, as opposed to relying on the birds to make it themselves.

XOS is a prebiotic that can also help promote the growth of beneficial bacteria in the gut. Another benefit is that XOS is extracted from the waste products that are derived during the grain milling process, which makes it relatively inexpensive.

"I'm working on prebiotics, mainly trying to make them from waste products in starch milling," explained Dr. Natalie Morgan, a poultry nutritionist at the University of New England, noting that the industry is always looking for less expensive ways to find grain for poultry production.

Better benefits in layers

XOS has already been studied in broilers, where the prebiotic significantly improved both gut health and production.

"What we've seen in broilers is that it fuels the good microbiota, which means the good ones can flourish and the pathogenic bacteria can't," Morgan said. "We're hoping that in laying hens, we'll see more of a response because they live for longer and they've got a more mature microbiota, so it's all about priming their microbiota so it can better use the fiber in their diets."

The longer lives of layer hens could further amplify the positive effects of the prebiotic, boosting feed conversion and productivity and possibly even replacing the need for antibiotics in some cases, she added.

The eight-week project — scheduled to begin in April 2021 — is funded by a $22,000 Australian Eggs Award in the 2021 Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry. ■

Emerging nutritional solutions for coccidiosis in poultry

Coccidiosis and necrotic enteritis remain 2 of the most important poultry diseases in the US

IOANNIS MAVROMICHALIS

There are several nutritional supplements that can be used to fight coccidiosis.

Iaroslav Konnikov | BigStock.com

It is estimated that about US$10 billion are lost each year in the United States due to coccidiosis and necrotic enteritis. If we consider that coccidiosis is one of the predisposing factors to necrotic enteritis, then we can appreciate the extent of damage caused by coccidia alone.

Unfortunately, anti-coccidial drugs are being frowned upon in the U.S., in rearing schemes based upon the marketing approaches of "no antibiotics ever" or "reduced antibiotic use." Clearly, such an approach does not help diminish the impact of coccidiosis. In the U.S., unlike the EU, anti-coccidial drugs are considered antibiotics and there is an increasing tendency to remove all such antibiotics from animal feeds.

In addition to alternative veterinary interventions (vaccinations) and altered management schemes, nutrition is the third route through which coccidiosis is addressed today. To this end, several nutritional supplements — additives — are being tested. These are mostly additives that have been tested, with more or less success, against bacterial pathogens. The following list is but the beginning of these efforts as more products enter the testing phase.

Functional lipids

It has been suggested that lipids found in castor oil and cashew nut shells can act aggressively against gram-positive bacteria. The same was tested in two studies against coccidia. It was found that these two lipids increased bird livability and decreased lesions caused by coccidiosis. In essence, these lipids acted in a role similar to monensin, conferring similar beneficial results in birds challenged with coccidia.

Tannins

This is a large group of chemical compounds found in plants. As such, they could be grouped under the more generic term "phytogenics," but they are being marketed as a distinct product. At the moment, they appear to be the most promising agent against coccidia, although not all tannins are the same. Thus, their efficacy is bound to be product specific. Their efficacy has been demonstrated in poultry, rabbits and piglets. In particular, use of tannin-based products has

@ Nutritional supplements to fight coccidiosis in broilers: **bit.ly/2Nd0DIQ**

been shown to decrease the damage caused by necrotic enteritis. Finally, tannins have been shown to increase microbiota diversity in monogastric species.

Phytogenics

As mentioned, phytogenics include a wide variety of plant-based compounds, either natural or synthetic. They are being marketed as blends of various active substances in various forms, most often protected to safeguard against their volatile nature. As it is to be expected, their efficacy is widely variable. Given the large number of commercial products, research abounds and is the main focus on finding nutritional agents against coccidia.

Organic acids

Organic acids are largely effective against bacteria. They are a major component of any antibiotic-free nutrition program in poultry. As it is to be expected, organic acids have been also tested against coccidia. The products used so far have largely failed to elicit any meaningful response. Perhaps they can be somewhat active against *Clostridium perfringens*, the causative factor behind necrotic enteritis, but they do not show much promise against Eimeria species — the protozoa that cause coccidiosis.

Probiotics and prebiotics

No probiotic strain of bacteria has been shown to act directly against Eimeria species. It is possible, through genetic modification, where allowed, to see probiotics that are specifically designed for such purpose. So far, their action is indirect by enhancing the overall gut health as they promote a healthier microbiota. The same can be said for prebiotics that benefit natural host microbiota. The use of current pro- and prebiotics should be considered as an auxiliary one in a broader scheme against all microorganisms that negatively affect gut health.

Algae

Recent evidence suggests that some algae-based products may modulate host immunity enough to offer a substantial relief against a coccidiosis challenge. Preliminary results point to a more robust gut epithelial architecture that can better withstand the aggressive action of damaging coccidia. The effects of different additives on host immunity is being investigated vigorously as this appears to be a viable route against coccidiosis.

Despite promising results from many unique additives, the bulk of available nutritional anti-microbial agents is largely ineffective against coccidia. At best, improved gut health helps the animal to fend off coccidia on its own. ■

Can more worker engagement increase poultry processing yields?

Encouraging teams of workers to monitor individual sections of the processing plant and take remedial action when problems arise could boost overall profitability.

EDUARDO CERVANTES LÓPEZ

"Netarchy" is a flexible management concept that puts trust in workers and fosters creativity and business development. COVID-19 has resulted in much being revaluated and now may be the time to consider letting traditional hierarchies in poultry processing go and, instead, looking to the workforce to take the business forward.

Rather than a top-down approach, under a netarchy, each section of the plant is responsible for its own results. Dividing the processing operations into sections makes taking corrective action easier.

Monitoring equipment must be correctly calibrated and functioning properly. Staff close to operations may be better placed to ensure this than distant management. *Eduardo Cervantes López*

These management sections might be: live bird storage, hanging, evisceration, packing, cold room storage and cleaning and disinfection.

For each area or activity, groups of no more than four people are formed. Group members must have a broad conceptual and operational knowledge of each area including processing, quality, maintenance and machine operation. These teams then evaluate their section's use of the plant's raw materials—live or processed broilers – along with daily operational expenditure.

These modular evaluations should be overseen by a general coordinator, an employee with recognized experience in each area.

The following checklists could serve as guides for some of these areas.

Lairage to hanging

WAITING AREA:

- Within the lairage, are all of the fans and humidifiers working properly?
- Are digital thermo hygrometers properly calibrated and functioning?

Eduardo Cervantes López is an international consultant based in Colombia. He can be contacted at icproave@hotmail.com or via www.icproave.com.

Are birds moved in the correct way using trucks?

Eduardo Cervantes López

- Are the facilities in good condition?
- Are chickens calm and breathing normally?
- What is the average time spent in the lairage?
- How many dead-on-arrivals are there?
- Are cages unloaded with due care and attention?
- Are the lids of all the cages delivered to the hanging area in good condition?
- Are cages moved using dedicated trucks?
- What percentage of cages or containers are in good condition?
- Are broken cages repaired on a daily basis to prevent birds being harmed?

SHACKLING

- What is the overhead conveyor speed?
- Are all the shackles filled?
- Are shackles in a good state of repair?
- Are shackle connectors complete?
- Are shackle wheels running on the rail normally?

Transport to the bleed tunnel

- Are broilers secure in their shackles?
- Are their feet level?
- Are birds flapping their wings while on the overhead conveyor?
- Does the breast comforter vibrate and make proper contact with the breast?
- How much time elapses between the last hanger and entry to the stunner?

STUNNING

- Do birds experience pre-shock on entering the stunning cabinet?
- How long is the stun?
- Do birds exit the water bath completely unconscious?
- Do birds exit the stunner shaking and subsequently become calm?
- How much time elapses between a bird exiting the stun bath and reaching the killer or the slaughter person?

SLAUGHTER AND BLEED

- What type cut is made – lateral, ventral or full decapitation?
- Are birds calm while passing through the bleed tunnel?
- How long does bleed take?
- Are the birds dead on entering the scalder?
- What percentage of blood is bled from the birds prior to entering the scalder?

Scalding and plucking

- What type of birds are being plucked, white or yellow birds?
- Temperature and time in the scalder?
- Do birds float as they pass through the tank?
- Does the scalder water have a lot of foam?
- How much replacement water is added?
- What is the breast surface temperature on exiting the scalder?
- Is the route between the scalder exit and the entrance to the first plucker covered?
- What is the breast surface temperature on entering the first plucker?
- Are there heat escapes during plucking?
- On exiting the last plucker, are the following observed?

Wings with dilated blood vessels
A red ring of various hues at the shoulder joint
Breast – torn skin
Breast – over-scalded
Tail – torn skin
Feathers on the tail or wings

- The breast surface temperature on exiting the last plucker?

If all the above are properly checked in real time on a daily basis, issues can be investigated, and corrective

action taken quickly to minimize any impact on dry yield prior to chilling.

Reducing expenditure

Putting operations under the microscope to examine how cost savings can be achieved is a worthwhile exercise and there are a number of areas where this can be particularly valuable.

Scalding – water heating

If a plant does not process sub-products there is no need for a steam-producing boiler. A solar heater can be a good alternative.

Electricity

Illumination comes via daylight in some areas of the processing plants but its use could be extended to other areas such as the scalding, plucking and evisceration. To complement this approach, solar panels could be used to provide electricity for night shifts. Additionally, installation of movement sensors can help ensure lights are only on when needed.

Some plants put all operations into motion at the start of a shift. From hanging to reaching the scalder takes at least 4 minutes, while scalding and plucking will take approximately 5 minutes. Starting scalders and pluckers too early will, over the course of a year, result in significant waste and these operations should be started only once they are needed.

An eye for detail pays dividends in poultry processing
www.WATTPoultry.com/articles/42278

Employees

Ergonomic evaluations of work areas can be carried out to ensure that a worker's equipment is not reducing the yield per hour required from each worker.

Stoppages

To prevent stoppages, plants must have good daily maintenance. When unexpected stoppages occur, losses can be high. If stoppages occur in the sections between hanging and evisceration, the number of birds that will die from heat stress will rise, resulting in additional losses.

A management reorganization following the principles of netarchy can lead to not only the discovery of why certain sections of the processing plant may not be working as smoothly as they could be but allow immediate action to be taken if problems are discovered. ■

Those close to operations are able to observe if broilers are fully emerged in scalding tanks. *Eduardo Cervantes López*

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