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Poultry Fortune

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The International Egg Community is making plans to celebrate **"World Egg Day"** on Friday 12th October 2018.

This year, the industry's global campaign will focus on the crucial role that eggs play throughout our lives – as a source of the highest quality protein.

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From the Editor...

M.A. Nazeer

Dear Readers,

The October 2018 issue of ***Poultry Fortune*** is in your hands.

In the News section, you may find news about: Huvepharma, a poultry pharmaceutical company focused on developing, manufacturing, and marketing human and animal health products, announces the acquisition of T-HEXX Animal Health, a division of Hydromer Inc. and the Animal Health Division of Neovia from InVivo Group, a move that will expand the EU focus on livestock animal health products, and includes Qalian France (Segré), Meriel France (hygiene line, St Etienne, France), Qalian Portugal (Lisbon) and Qalian Italy (Carpi) and the branded veterinary pharmaceuticals (drugs & premix), animal dietetics and hygiene product lines.

Recently new outbreaks of Newcastle Disease (NCD) have been reported from several European countries. Despite vaccination being in most cases mandatory for commercial farms, backyard farms may hold and spread this highly infectious disease back to commercial flock. This increases the viral pressure, poses a challenge to the birds' health and certainly – as is the case in these outbreaks – when the actual virus is slightly different from the strain used in vaccination this may lead to diseased birds. Repeating a vaccination under these circumstances can give the required protection, says the report published in these columns.

About 1.7 million chickens have been killed in flooding from Florence as rising North Carolina rivers swamped at least 60 farm buildings where the animals were being raised for market, according to a major poultry producer.

World Egg Organisation (WEO) announced the global egg industry's pledge to work in partnership with the United Nations, to fulfill its Sustainable Development Goals (SDGs) The UN's SDGs represent a shared vision to eradicate poverty and social inequality and to tackle climate change by 2030. A social contract between the world's leaders, the successful delivery of this ambitious blueprint is dependent on engagement and participation from international industry. The WEO has outlined key areas where it is delivering positive outcomes in line with the UN's targets.

Poultry Fortune

Our Mission

Poultry Fortune will strive to be the reliable source of information to poultry industry in India.

PF will give its opinion and suggest the industry what is needed in the interest of all in the industry.

PF will strive to be The Forum to the Stakeholders of the industry for development and self-regulation.

PF will recognize the efforts and contribution of individuals, institutions and organizations for the development of poultry industry in India through annual Awards presentation.

PF will strive to maintain quality and standards at all times.

Cargill has reached an agreement to acquire Polish food company Konspol, signaling the introduction of its global protein business into the Polish market and strengthening the company's poultry footprint. The move expands operations in this space to 14 countries. Under the agreement, Cargill will purchase the Polish assets of Konspol's food and fresh chicken business. Konspol provides a range of products in the chilled convenience, frozen and cold cut categories.

As per the report Japanese scientists have created hens that can lay multi-million pound "golden eggs" containing an expensive protein used to treat serious diseases such as cancer and hepatitis. The creation of the so called "golden eggs" was masterminded by scientists at Japan's Biomedical Research Institute at the National Institute of Advanced Industrial Science and Technology.

Indian Herbs, a market leader in Herbal Animal Health Care Products Industry since 1951, conducted a Technical Seminar at Kolkata on its unique range of herbal poultry products on 3 August 2018 with the aim to spread the awareness about herbal poultry feed supplements which are the best alternatives of synthetic products and are helpful to reduce the production cost of feed for better profitability.

Lallemand Animal Nutrition confirms its commitment to poultry nutrition research at the XVth European Poultry Conference in Dubrovnik, Croatia. The company, sponsor of the event, presented six new studies on the benefit of probiotics, yeast derivatives and antioxidants in poultry nutrition, as posters and one oral presentation. Two of these showed for the first time the potential of a multi-strains yeast fractions product to help reduce the impact of coccidiosis in broiler chickens.

In the Articles section, article titled **"Fundamental Rules to Keeping Backyard Chickens"** by Claire Woods discussed to a first time chicken keeper, the thought of keeping your flock safe and healthy can seem daunting. However, experienced flock owners will tell you that, once you understand the basics, chickens will largely take care of themselves. Experience has taught that there are five key things that backyard chickens need to be healthy.

Article titled **"How to achieve successful coccidiosis vaccination"** by Ben Dehaeck discussed Coccidiosis is an infectious disease caused by protozoa from the genus Eimeria. The parasite is host specific and has a direct lifecycle. Birds get infected by ingestion of live sporulated oocysts omnipresent in poultry houses. Once ingested by the chicken, the parasites invade and multiply in epithelial cells and hereby cause significant damage.

Readers are invited to send their views and comments on the news and articles published in the magazine and they would be published under "Readers Column". Time to time, we shall try to update you on various aspects of poultry industry. Keep reading the magazine regularly and update yourself.

M. A. Nazeer
Editor, Poultry Fortune
info@poultryfortune.com

Huvepharma Acquires T-HEXX Animal Health & Qalian, an Invivo & Meriel Company

Announced Incentives of Eight Crores to Integration Team Members

Pune: Huvepharma, a fast-growing global pharmaceutical company focused on developing, manufacturing, and marketing human and animal health products, announces the acquisition of T-HEXX Animal Health, a division of Hydromer, Inc. and the Animal Health Division of Neovia, from InVivo Group, a move that will expand the EU focus on livestock animal health products, and includes Qalian France (Segré), Meriel France (hygiene line, St Etienne, France), Qalian Portugal (Lisbon) and Qalian Italy (Carpi) and the branded veterinary pharmaceuticals (drugs & premix), animal dietetics and hygiene product lines.

The T-HEXX lines of products are based upon innovative hydrophilic polymer technologies for animal health, primarily in the dairy and equine markets. T-HEXX Animal Health manufacturers and sells a broad range of products utilizing patented hydrophilic polymer technologies designed for mastitis management in dairy cattle, hoof care, and unique germicidal topical products for horses. They serve customers in the U.S. and internationally.

On the T-HEXX acquisition, Mr Glen Wilkinson, President of Huvepharma U.S. remarked "The purchase of T-HEXX Animal Health supports Huvepharma's vision for growth and development. T-HEXX has created great products for the dairy and equine markets and we are thrilled to add these unique product lines to our portfolio."

"Huvepharma will immediately assume marketing and sales of T-HEXX brands to our current customers while utilizing the sales and marketing strengths of AgriLabs. This timely purchase appropriately follows the recent announcement of a new dairy cattle vaccine – KLEBVax SRP", added Mr. Wilkinson.

On the Qalian acquisition, Dr Christian Vervaet (DVM), EU Sales Director Huvepharma said "We're very excited about this addition to our EU animal health business". "This acquisition furthers Huvepharma's strategy in creating a balanced portfolio of animal health products and enhancing our presence in Europe and our international markets. We will be in a better position to serve our customers with an extended high quality product range, the Qalian team and the complementary production facilities. Huvepharma and Qalian are strong, complementary businesses focused on providing real solutions for animal health," Dr Vervaet added.

Mr Alex Klein (DVM), General Manager Qalian France said "We're pleased to join Huvepharma's internationally recognized animal health company. This move will provide us with resources to quickly bring new solutions to veterinarians and producers. It will also allow us to accelerate the international development of our ranges of products".

Huvepharma SEA (Pune) Pvt Ltd, Managing Director, Mr O.P. Singh expressed his excitement and appreciation of the acquisitions. In his words "Huvepharma Group's dedication to the animal health industry finds its expression time and again through their commitment to expansion, upgrade and increased investments in acquiring specialized products and companies. This dedication is the cornerstone of quality deliverables and makes the Group reliable and lasting. Huvepharma SEA is pleased to be a part of such an organization and we, as always, look forward to our contribution in strengthening the bond with our esteemed customers & stakeholders through the wide range of products and services with the highest degree of technological innovations and scientific platforms."

About Huvepharma: Huvepharma is a privately-owned company, headquartered in Sofia, Bulgaria. Huvepharma's animal activities are focused on livestock animals. Huvepharma differentiates by producing in-house the Active Pharmaceutical Ingredients that compose more than 80% of its range offering an optimal control on product quality.

About AgriLabs: AgriLabs, a member of the Huvepharma® group of companies, is a leader in biological innovation for animal health in the United States. Through a product range that includes licensed and custom vaccines, proprietary DNA platform and adjuvant technologies, and other leading brands, AgriLabs is improving animal health, nutrition and productivity. For more information, visit agrilabs.com.

About Hydromer Inc.: Hydromer is an innovative, certified polymer development company engaged in the business of listening to the voices of our clients, focusing on their goals by inventing, developing, patenting, licensing, manufacturing polymer-based products and services. We serve the medical device, pharmaceutical, animal health, biotechnology, industrial, cosmetic, and personal care markets.

About Qalian & Meriel: Qalian & Meriel represent the Animal Health division of Neovia (nutrition & animal health subsidiary of InVivo Group). Qalian's activities are focused on livestock animals. Qalian is a leading player in France and abroad, providing customers with veterinary drugs, medicated premix, animal dietetics and hygiene solutions.

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1 Perozo, F. et al (2008). Avian Pathology, 37:3, 237-245.
2 Merial internal data.
3 Merial internal data.

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IVPI Organises Seminar with the theme "Food Safety – Insights into Consumer Minds"

Dr Kuppuswamy Mohan received Lifetime Achievement Award

Bengaluru: Institution of Veterinarians of Poultry Industry (IVPI-ASP), Bengaluru organised its annual seminar on 14 August 2018 at Shangri-La Hotel, Bengaluru. Path breaking ideas and initiatives were discussed by innovative entrepreneurs and leading scientists alike during this event. Clutching on to this expectation, IVPI – ASP set a new benchmark this year with the most relevant theme and with a "Life Time Achievement Award for the poultry veterinarian".

Arun Subbaiah

The theme of the event was "Food Safety – Insights into consumer minds". Four speakers from poultry and food industry who were in some way pioneering the marketing outreach to chicken consumers. They were as below:

1. Mr Arun Subbaiah, AVP, Packaged Foods Division, CPF India, Bengaluru: Food Safety initiatives in Chicken Meat Marketing
2. Mr Narendra Pasuparthy, CEO, Nandu's Chicken, Bengaluru: Engaging consumers through Quality & Innovation
3. Mr Suresh Parameshwaran, CMO, Fresh to Home Meat, Bengaluru: Concepts of Modern Online Fresh Food Marketing.
4. Mr Nikunj Sahoo, GM, Meat Procurement Business, Metro Cash & Carry, Bengaluru: Marketing of Chicken – A metro experience

Mr Arun Subbaiah spoke on Food Safety Initiatives in chicken meat:

There are three sets of chicken consumers, by name retail consumers, QSR consumers and food service consumers. While safety (designated residues within regulatory limits), cold chain and traceability are common for all three segments of consumers, the factors like timeline, certification, value additions are specific to latter two. The speaker dealt in depth with these items. He stressed that the consumers and stakeholders have to wake up to an environment of food safety regulations driven market trends.

1. For traceability, it is important to link all phases of operations, either integrated or well linked processes
2. Branding of chicken meat and value added products, ease consumers purchase process
3. Animal welfare is a duty of every producers. Though regulations give minimum guidelines, producers might have to go well beyond that to earn consumer trust.

Second speaker Narendra Pasuparthy spoke on Engaging consumers through Quality & Innovation. He highlighted the facts as below:

1. Engaging multiple channels to reach to consumers. Seldom today's consumers buy their food from a fixed channel. Hence, it is important to provide the same high quality experience regardless of the channel of service.
2. Mr Naren explained how did he come out with "Concept Outlets" which are elegantly designed keeping in the insights from modern architecture, aesthetics, functionality of the outlet, hygiene of the place and freshness of meat delivered.
3. The advertisements in social media and in mobile android / iOS apps were another innovation from Nandu's to deliver the messages on safety, residues within approved regulatory limits, hygienic production systems, and trust.

Overall, Mr Naren Pasuparthy's speech gave a lot more core and corollary ideas to the gathered producers and food marketeers.

The third speaker, Mr Suresh spoke on Concepts of Modern Online Fresh Food Marketing

He brought forward the following points:

1 - Combining Technology& farming can beamazingly fun & lucrative!

2 – Technology can bring disruptive changes, just need to be open to change

3 - Teaching technology to fishermen and farmers can be extremely hard!

4 – Connecting producers to consumers leads to happierconsumers, producers and CFO!

5 – The Indian fresh food market is very large

6 – Consumers do care about residue free fresh &delicious food

7 – E-Commerce is probably the fastest way to grow a brand, but with caveats

The last speaker Mr Nikunj Sahoo spoke on Marketing of Chicken – A metro experience

The speaker highlighted the sudden spurt in food consumption outside the traditional home food, in quick service restaurants and casual dine restaurants in the recent past and continuing to a foreseeable future at about 18% compounded annual growth rate.

The speaker highlighted the importance of following in his speech:

1. Up to date technology in food production and processing
2. Monitoring and assuring food safety and quality
3. Building infrastructure for supply chain, storage and logistics

The speaker highlighted the need for all food chain stakeholders to proactively plan actions to build consumer trust in food and defend against the myths spread about scary food.

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He also highlighted the need for active collaboration of food chain stakeholders and regulators. The other important topics he had touched upon were branding of food to build trust in consumers and maintain consistency of food quality. He also demonstrated the extensive processes (in the form of check list) required from sourcing to sale to ensure the quality food is delivered to all consumers at all times.

Professor Devegowda, the President of IVPI and the beloved leader in chicken industry inaugurated the conference with his opening remarks. The key attraction was his clarion call to all industry stakeholders and consumers to fight the scare created about food in the recent past by some bad elements in the media. He spoke authentically telling that "Hormones or Steroids were never added to chicken production. Antibiotics are used now only for treating diseases and keep up the health of chicken. Only healthy chicken can produce healthy food. Dr K. Mohan had been a mentor of a generation of poultry veterinarians. Dr Mohan was accompanied by his wife and daughter and his close family members. Dr B. P. Manjunath presented the event with all aplomb. Dr Mohan was honoured with a Petah, garland, fruit platter, shawl, a plaque and a citation. The dignitaries like Mr Akhilesh Babu, Prof. Srinivasa Gowda, and others were on the dais.

Dr L. Aravind compared the function professionally and recognised all speakers with saplings to mark the significance of green earth. Dr Ravi Kiran proposed vote of thanks.

> *"Hormones or Steroids were never added to chicken production. Antibiotics are used now only for treating diseases and keep up the health of chicken. Only healthy chicken can produce healthy food."*

Dr G. Devegowda

only for treating diseases and keep up the health of chicken. Only healthy chicken can produce healthy food. There is a considerable improvement in the chicken production facilities with huge investments in modern technology".

The Life Time Achievement award for one among the highest contributing veterinarians was awarded to Dr Kuppuswamy Mohan. Dr K. Mohan had a profound contribution to the poultry industry in different parts of India and worked tirelessly to lay the foundational values of Institution of Veterinarians of Poultry Industry. In the illustrious career of more than 4 decades he had supported many an entrepreneurs of poultry to give shape to their organisation, by maintaining the health of their poultry stock.

Dr Kuppuswamy Mohan received Lifetime Achievement Award from IVPI at Bengaluru on August 14.

Newcastle Disease is Never Far Away

Despite all efforts and good intentions poultry diseases are unfortunately never far away.

Recently new outbreaks of Newcastle Disease (NCD) have been reported from several European countries. Despite vaccination being in most cases mandatory for commercial farms, backyard farms may hold and spread this highly infectious disease back to commercial flock.

This increases the viral pressure, poses a challenge to the birds' health and certainly – as is the case in these outbreaks – when the actual virus is slightly different from the strain used in vaccination this may lead to diseased birds. Repeating a vaccination under these circumstances can give the required protection.

Vaccination without biosecurity measures is a waste of time and money. Unlike antibiotics in use against bacterial diseases, vaccination requires intensified biosecurity: the vaccine is a weakened version of the same disease-causing virus, which inside the body activates the immune system by simulating the virus attack. Immunity issues with other bacterial or viral challenges at the same time are problematic and may actually hinder the formation of antibodies by the immune system and thus the build-up of protection against NCD. Outside the body, shedding of vaccine may lead to dissemination of the virus to other flocks/animals.

A disinfectant with particularly strong killing effect towards viruses is required under these circumstances. Most quat-based products are out of the question for this type of critical applications where a strong killing effect against viruses is required.

> *"Vaccination without biosecurity measures is a waste of time and money."*

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To be used without moderation (at the recommended dilution rates) by both commercial farms and particularly the increasing number of small backyard farms !

Further information and guidelines for use can be obtained from local Halamid distributors.

Biomin takes Mycotoxin Academy to more Regions in India

Following the success of the first edition of Mycotoxin Academy concept in India in July, BIOMIN in association with its supply chain partners extended the success streak to four more locations in India.

Hyderabad: A total of over 500 customers and poultry players participated in these Academies, which facilitated knowledge transfer between BIOMIN experts and customers. The events were also the testimony to the commitment by the innovative feed additive firm in creating awareness about the mycotoxin risk awareness in India and providing innovative solutions to the problem.

Following the first leg of Mycotoxin Academies in north India in July, the second leg of these signature events began in Hyderabad. On August 14, the event was held at Radisson Hitec City in Hyderabad, followed by another event in Coimbatore, held at Le Meridien on August 16.

At the Coimbatore Mycotoxin Academy, Dr A Natarajan, Professor and Head, Animal Feed Analytical and Quality Assurance Laboratory of Veterinary College and Research Institute, Namakkal participated as guest speaker and offered invaluable insights to the participants.

The final leg of the Mycotoxin Academies began in Pune on August 29 at Hotel Conrad, followed by another event at Hotel Swissotel in Kolkata on August 30.

In his introductory speech, Edward Manchester, Regional Director, BIOMIN Asia Pacific highlighted the company values and explained that Mycotoxin Risk Management and Gut Health Management are the two pillars for BIOMIN.

"R&D is the cornerstone for BIOMIN and we are the first and only company with an EU authorization of three ingredients in the group of feed additives for mycotoxin deactivation," he added.

Participating in all the Mycotoxin Academies as lead speaker, Eileen Han, Regional Product Manager – Mycotoxin Risk Management, BIOMIN Asia-Pacific explained about the risks and impacts of mycotoxins in poultry with data from BIOMIN Mycotoxin Survey Report.

"When it comes to counteracting mycotoxins, the poultry industry tends to think of 'toxin binders' first. However, clay mineral binders are not an effective answer to all major mycotoxins," said Ms Han, and added that a combination of different strategies like biotransformation and bioprotection can counteract the negative effects of mycotoxins in poultry more completely.

It may be noted that the key to the effectiveness of Mycofix® product line from BIOMIN is its three-pronged strategy of mycotoxin control, namely: biotransformation, adsorption and bioprotection.

Gangga Widyanugraha, Regional Technical Sales Manager – Poultry in his presentation on "Feed testing and Necropsy" highlighted the prevalence of mycotoxin in poultry in India. He also quoted various instances of the mycotoxin risks he found from the extensive postmortem analyses of birds he had done across India.

Keerthivasan Chandrasekar, Digital Marketing Executive in his presentation on the digital media initiatives being done by the company in India and pointed out that staying connected with the official social media handles of the company on Facebook and Twitter will be of immense benefit to the farmers.

Apart from this, he also explained about using Mycofix® App and accessing key findings of the BIOMIN Mycotoxin Surveyand articles from Science & Solutions to the farmers.

BIOMIN has conducted the Mycotoxin Survey Program annually since 2004 and the accumulated number of samples is already over 75,000, which makes the program the largest worldwide data pool for mycotoxin analyses.

On the success of Mycotoxin Academies in India, Sujit Kulkarni,

Managing Director, BIOMIN India commented that the company has now reached all key locations in India in creating awareness about mycotoxin risk management.

"It is a proud moment for all of us and I would like to thank the entire BIOMIN team for their support and commitment in making this concept a great success," he said and added that BIOMIN will continue to do such innovative programs, which sets them apart.

The Mycotoxin Academies were a cobranding initiative by BIOMIN, which was supported by its supply chain partners, Tara Group, Sri Amman Enterprises, Ayugen and SM Marketing for the events held in Hyderabad, Coimbatore, Pune and Kolkata respectively.

Sales Directors Shriraj Sirmokadam, Rajan Seralathan, Neeraj Singh and Regional Sales Manager Praveen Reddy took active part in planning and coordinating the events in their respective territories and ensured the success of the Mycotoxin Academies.

Hurricane Florence: 1.7 Million Chickens Drown As North Carolina Rivers Swell Up, Swamp Poultry Farms

Raleigh: About 1.7 million chickens have been killed in flooding from Florence as rising North Carolina rivers swamped at least 60 farm buildings where the animals were being raised for market, according to a major poultry producer.

Sanderson Farms said recently the losses occurred at independent farms that supply its poultry processing plants. The company said its facilities suffered no major damage, but supply disruptions and flooded roadways had caused shutdowns at some plants. In addition, about 30 farms near Lumberton have been isolated by flood waters, hampering the delivery of feed to animals. The lack of food could cause additional birds to die if access isn't restored quickly, the company said.

The NC Pork Council says some hogs also may have died when farms flooded, but that mortality figures are not yet available. The pork industry trade group says farmers have been working before and after the storm to move at-risk animals to higher ground. The industry lost about 2,800 hogs during flooding from Hurricane Matthew in 2016. The Department of Environmental Quality said the earthen dam at one hog lagoon in Duplin County had breached, spilling its contents. Another dozen of the pits containing animal feces and urine had either suffered structural damage, had wastewater levels go over their tops from heavy rains or had been swamped by floodwaters. Large mounds of manure are also typically stored at poultry farms.

Even though the sun shown in parts of the state Tuesday, major flooding is continuing after Florence's passage and is expected to worsen in some areas. Sixteen North Carolina rivers were at major flood stage

Tuesday with an additional three forecast to peak by Thursday. An environmental threat is also posed by human waste as low-lying municipal sewage plants flood. On Sunday, the Cape Fear Public Utility Authority reported that more than 5 million gallons of partially treated sewage had spilled into the Cape Fear River after power failed at its treatment plant.

The Environmental Protection Agency said Monday that 16 community water treatment facilities in North Carolina are unable to supply drinking water and that seven publicly owned sewage treatment works are non-operational due to the flooding. Duke Energy is continuing cleanup operations Tuesday following a weekend breach at a coal ash landfill at its LV Sutton Power Station near Wilmington. Duke spokeswoman Paige Sheehan said a full assessment of how much ash escaped from the waterlogged landfill is ongoing. The company initially estimated Saturday that about 2,000 cubic yards (1,530 cubic meters) of ash were displaced, enough to fill about 180 dump trucks.

The coal-fired Sutton plant was retired in 2013 and replaced with a new facility that burns natural gas. The company has been excavating millions of tons of leftover ash from old pits there and removing the waste to a new lined landfill constructed on the property. The gray ash left behind when coal is burned contains toxic heavy metals, including arsenic, lead and mercury. Photos from the site provided to The Associated Press by Cape Fear River Watch, an environmental advocacy group, show cascades of gray-colored water spilling from at least two breaches at the landfill and flowing toward Sutton Lake, the plant's former cooling pond which is now used for public recreation, including fishing and boating.

Sutton Lake drains into the Cape Fear River. Sheehan said Duke's assessment is that there was minimal chance any contaminants from the spill had reached the river. At a different power plant near Goldsboro, three old coal ash dumps capped with soil were inundated by the Neuse River. Duke said they had no indication those dumps at the HF Lee Power Plant were leaking ash into the river. Duke's handling of ash waste has faced intense scrutiny since a drainage pipe collapsed under a waste pit at an old plant in Eden in 2014, triggering a massive spill that coated 70 miles (110 kilometers) of the Dan River in gray sludge. The utility later agreed to plead guilty to nine Clean Water Act violations and pay $102 million in fines and restitution for illegally discharging pollution from ash dumps at five North Carolina power plants. It plans to close all its ash dumps by 2029.

Change of Guard: New Leadership team elected for CLFMA of India

S.V . Bhave, Berg & Schmidt India, elected the Chairman

New Leadership Team of CLFMA of India for year 2018-20
from left: Rajeev S. Murthy, S.V. Bhave,Neeraj Kumar Srivastava, Divya Kumar Gulati and Naveen Pasuparthy

Mumbai: CLFMA of India is the apex organization and the voice of the country's dynamic livestock sector. The 51-year old industry association is recognized as one among the highly reputed in India. CLFMA OF INDIA is well recognized by livestock farmers, Central and State Governments, government departments, Agricultural Universities, Veterinary Colleges and also National Research Institutes in India as well as outside the country.

CLFMA's 51st Annual General Meeting was held and the new leadership team took charge for the period 2018-20. Speaking on the occasion, the outgoing Chairman Mr B. Soundararajan expressed his appreciation and conveyed best wishes to the new team led by Mr S. V. Bhave, Managing Director, Berg and Schmidt India Pvt Ltd, who got elected as the new Chairman.

Mr B. Soundararajan mentioned that CLFMA is well respected and well recognised in the Livestock industry. CLFMA is the pioneer organization and voice of the sector, which actively works to protect the industry's interest through policy and regulatory advocacy.

"It was my great pleasure and honour to serve as the Chairman of CLFMA of India for the last two years during which the organization made significant progress in terms of 3 I's - "Image, Impact & Income". I am sure under the able stewardship of a visionary leader like Mr S V Bhave, CLFMA will continue to grow to newer heights. I wish the new Office Bearers and the Managing Committee Members all the success." commented Soundararajan.

CLFMA OF INDIA has over 230 members representing diverse sub - sectors of animal protein value chain including feed manufacturing, poultry, dairy and aquaculture business, animal nutrition and health, veterinary services, machinery and equipment, processing, distribution and retailing of meat and ancillary services such as banking.

Following Office Bearers were elected for the period 2018 – 20:

Chairman :

Mr S. V. Bhave, Berg and Schmidt India Pvt Ltd

Dy. Chairman :
Mr Rajeev S. Murthy,Godrej Agrovet Limited

Dy. Chairman :
Mr Neeraj Kumar Srivastava, Novus Animal Nutrition (India) Pvt Ltd

Secretary :
Mr Divya Kumar Gulati, Nurture Aqua Technology Pvt Ltd

Treasurer :
Mr Naveen Pasuparthy, Nanda Feeds Pvt Ltd

Immediate Past Chairman :
Mr B. Soundararajan, Suguna Holdings Pvt Ltd

The other members of the Managing Committee for 2018 – 20 comprises of:

1. Mr Sujit Komarla : Komarla Feeds
2. Mr Vijay Bhandare : Bhavani Agrovet Pvt Ltd
3. Mr Sumit Sureka : Shivshakti Agro (India) Ltd
4. Mr Anil M: KSE Limited
5. Mr Ramakanth V akula : The Waterbase Ltd
6. Mr Lakshmanan : Shanthi Poultry Farm Pvt Ltd
7. Mr Suresh Deora : S. A. Pharmachem Pvt Ltd
8. Dr Saikat Saha : Evonik India Pvt Ltd
9. Dr Devender Hooda : Huvepharma SEA (Pune) Pvt Ltd
10. Dr Sujit Kulkarni : Biomin India
11. Mr S. Kannan : Suguna Foods Private Limited
12. Mr Nakul Vakil : Cremach Private Ltd
13. Mr Abhay Shah : Spectoms Engineering Pvt Ltd
14. Mr Nissar Mohammed : Coastal Exports Corporation
15. Dr Vijay Makhija : DSM Nutritional Products India Pvt Ltd
16. Mr Balaram Bhattacharya : Indian Herbs Specialities Pvt Ltd
17. Mr Ramkutty : Niswin Enterprises

Mr S. V Bhave, the new Chairman of CLFMA of INDIA, acknowledged the critical role and valuable contributions of the immediate past chairman, Mr B. Soundararajan and his predecessors who played the vital role in building the organization all along the past five decades.

"The new team of CLFMA has an apt mix of experienced professionals. We will strive to uphold the reputation and the legacy of CLFMA and work committedly towards its growth in the years to come", concluded Mr S V. Bhave.

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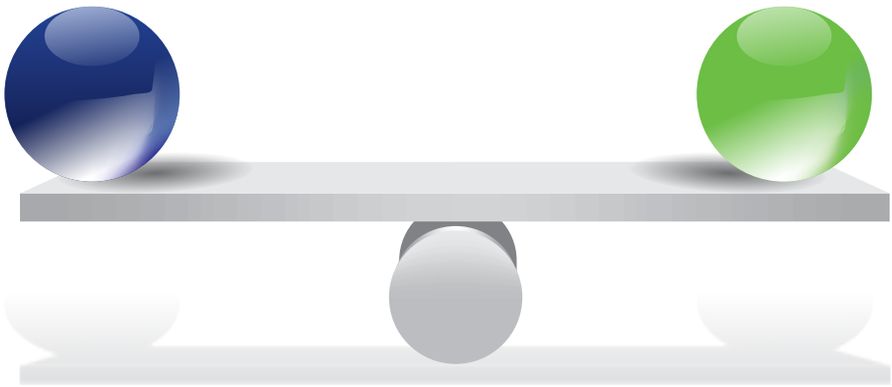

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Egg Industry Announces Commitment to United Nation's Sustainable Development Goals

On 12th September in Kyoto, the World Egg Organisation (WEO) announced the global egg industry's pledge to work in partnership with the United Nations, to fulfill its Sustainable Development Goals (SDGs)

The UN's SDGs represent a shared vision to eradicate poverty and social inequality, and to tackle climate change by 2030. A social contract between the world's leaders, the successful delivery of this ambitious blueprint is dependent on engagement and participation from international industry. The WEO has outlined key areas where it is delivering positive outcomes in line with the UN's targets.

Of the UN's 17 goals to transform our world, the WEO has identified six primary objectives where the egg industry is already making a significant impact through a range of dedicated sustainability initiatives. These specifically address the following goals:

- **Zero Hunger**

  Eggs are a sustainable, affordable source of the highest quality protein for everyone. Through its charitable work, the International Egg Foundation (IEF) is tackling food poverty experienced in developing countries, such as Swaziland and Uganda, through an ever-broadening range of community-based programmes.

- **Good Health and Wellbeing**

  Eggs fulfil numerous nutritional requirements and the industry is dedicated to educating the world about the positive benefits that this natural resource delivers as part of a balance diet.

- **Quality Education**

  Egg consumption supports brain development and concentration, particularly in young children. Additionally the IEF is responsible in its role as educational trustee for initiatives in Mozambique, Zimbabwe and Swaziland, providing resources that enable communities to become successful egg producers.

- Responsible Consumption and Production

  Building trust and transparency in our food supply chains is essential. To help overcome the threat of Avian Influenza the industry has published its biosecurity recommendations. Secondly, the issue of animal welfare is driving the operations of all international egg industry producers and country associations. This is evident in the WEO's role supporting the OIE in establishing a framework of Global Standards for Laying Hens.

- **Climate Action**

  The egg industry strives to continually reduce the resources it uses whilst ensuring the same output. Best commercial practice regarding sustainable intensification is regularly shared throughout the industry's member organisations.

- **Partnerships for the Goals**

  Collectively managing the future of our planet and its inhabitants is vital to the success of the sustainability agenda. There is a need for international discourse, interaction and unified policy making. The WEO recognizes the need to be proactive and accountable. To this end, the organisation continues to develop constructive relationships with the OIE, CGF and the major egg associations worldwide and its leading companies. This is supported by ongoing communication with the WHO, UN and WWF to address a range of sustainability issues.

This latest announcement marks the launch of the egg industry's Global Initiative for Sustainable Eggs (GISE) which will support a range of ambitious sustainability objectives – helping to deliver the organisation's vision of continuous improvement. These cover the following industry specific criteria:

- Preventing the diseases of animals becoming the diseases of human kind
- Improving nutrition
- The elimination of forced labour
- Environmental sustainability - the prevention of deforestation through the sustainable sourcing of soy
- Working to ensure the responsible use of antimicrobials
- Working to improve animal welfare

WEO Chairman, Tim Lambert, explains; *"Kyoto is the perfect location for our sustainable development announcement. Many members of the international egg industry are gathered for our Global Leadership Conference and this ancient city has been the site of previous historic agreements, that seek to change our world for the better. The UN's Agenda for Sustainable Development calls on us collectively, to initiate efforts to achieve the seventeen SDGs over the next twelve years. The global egg industry is absolutely committed to the cause.*

Society wants reassurance that companies are actively engaged with their customers and communities. Businesses have an inherent responsibility to do the right thing, for the right reasons. Through our own clearly defined goals, the egg industry is addressing the needs of people in both developed

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and developing countries - socially, economically and environmentally."

GISE's work co-exists alongside the framework of the UN's Sustainable Development Goals. From social responsibility and environmental sustainability to nutrition and better operational practices – every aspect has a humanitarian focus and benefit.

Cargill's poultry business expands into Poland with Konspol acquisition

Cargill has reached an agreement to acquire Polish food company Konspol, signaling the introduction of its global protein business into the Polish market and strengthening the company's poultry footprint. The move expands operations in this space to 14 countries.

Under the agreement, Cargill will purchase the Polish assets of Konspol's food and fresh chicken business. Konspol provides a range of products in the chilled convenience, frozen and cold cut categories.

Cargill will also acquire Konspol's portfolio of products, including branded and private label offerings, as well as its customer and supplier relationships.

"Konspol's commitment to high-quality food and passion for innovation is the perfect fit for Cargill's Global Poultry business. This acquisition allows us to better serve our customers through a diversified portfolio of value-added products," says Chris Langholz, President of Cargill Global Poultry.

"Konspol is a strong and established fresh chicken and value-added food company whose products are the preferred choice across Poland."

Cargill wants to develop the business and Konspol already has more than 1,700 employees in Poland and operates a feed mill, five broiler farms and two processing complexes. The acquisition will increase Cargill's production capacity and proximity to existing customers to offer expanded value-added and poultry products.

"Cargill is a company with huge accomplishments and a global reach. It is also a family-owned company that shares our values," explains Konspol Founder Kazimierz Pazgan. "I am certain this is the best guarantee of a future for Konspol, a company I have expanded with my family for almost 40 years."

Currently, Cargill employs more than 1,700 people in 22 locations across Poland and operates 19 animal feed mills, a premix oriented facility, a wheat glucose syrup and ethanol production plant.

No financial details have been revealed and the deal is subject to regulatory approvals.

Scientists Create Multi-Million Pound 'Golden Eggs' To Treat Cancer and Hepatitis

As per the report Japanese scientists have created hens that can lay multi-million pound "golden eggs" containing an expensive protein used to treat serious diseases such as cancer and hepatitis.

The creation of the so-called "golden eggs" was masterminded by scientists at Japan's Biomedical Research Institute at the National Institute of Advanced Industrial Science and Technology.

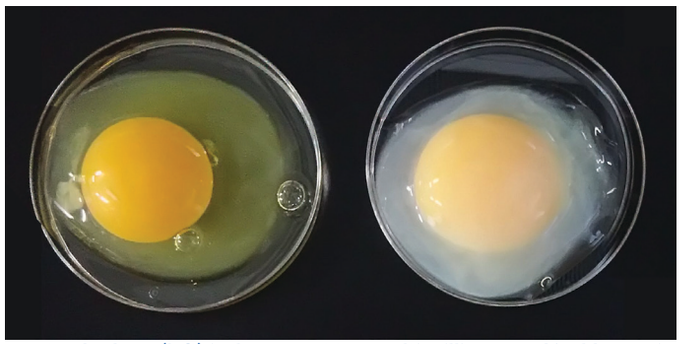
The new technology involved scientists using new genome editing technology to create hens that can produce eggs containing high quantities of the protein human interferon beta at a low cost.

Scientists first collecting cells that would turn into sperm from cockerel embryos and inserting a gene to produce human interferon beta.

The cells were then reportedly returned to the embryos of other cockerels, with the hatched cockerels later made to mate with wild hens.

Scientists found that their female offspring could subsequently lay eggs with high levels of human interferon beta – a natural anti-viral protein – found around the yolks.

The protein quantity in individual eggs ranged from around 30 to 60 milligrams, resulting in each egg reportedly being valued as worth between around £408,000 (60 million yen) and £2 million (300 million yen) a piece.



A standard egg (left) is shown next to a multi-million pound 'golden egg'

Human interferon beta is a natural anti-viral protein with a hefty price tag which is commonly used as a therapeutic agent for diseases such as cancer and hepatitis.

The scientists are currently collaborating with Cosmo Bio, a Japanese reagent maker, to explore the potential commercial production of the hen-based protein.

Cosmo Bio plans to sell the protein, produced by its own in-house hens, from early next year for research use, with a view to making it commercially available in the future following further tests.

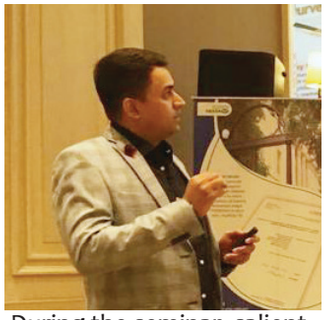
"For Interferon-beta protein, we have about 20 hens in-house," stated Mika Kitahara of Cosmo Bio. "So far our hens produce the eggs constantly, just like normal hens."

Highlighting the benefits of such a technique, she added: "These hens can produce eggs constantly, so we can obtain recombinant proteins in large amounts and with stability. In addition, this system doesn't involve killing hens."

Key Initiatives of Indian Herbs to Undertake Novel Research on Herbal Products

Glimpses of Research in a Technical Seminar at Kolkata, India

Indian Herbs, the pioneer & global market leader and No.1 Company in Herbal Animal Health Care Products Industry since 1951, conducted a Technical Seminar at J.W. Marriott Hotel, Kolkata on its unique range of herbal poultry products on 3 August 2018. The aim of the Technical Seminar was to spread the awareness about herbal poultry feed supplements which are the best alternatives of synthetic products and are helpful to reduce the production cost of feed for better profitability.



During the seminar, salient novel findings of research on Indian Herbs products based on Nutrigenomics, Transcriptomics, Complete gut Microarray, Gene Ontology of Gut, Metagenomics, Quorum Sensing were shared.

The technical seminar was conducted by highly strong marketing and technical team of Indian Herbs. Those present on the occasion were Dr Sushil Agrawal, Chairman, Mr Gaurav Agrawal, Director, Mr Balaram Bhattacharya, Exec. Vice President (Mktg. & Sales) and Dr Shivi Maini, DGM (Technical). This seminar was attended by the elite and important poultry farmers, Feed millers and renowned consultants of West Bengal.

The Technical seminar commenced with the welcome address by Mr Balaram Bhattacharya, Executive Vice President (Mktg. & Sales), Indian Herbs. He greeted all the guests.

Mr Gaurav Agrawal, Director had given corporate presentation on Indian Herbs and informed the participants about the activities being undertaken at R&D Centre of Indian Herbs for ensuring best quality and result oriented herbal poultry products. He has also appraised the guests about the various achievements of Indian Herbs during its long journey since 1951. Today Indian Herbs is the leading company of the world which is providing the efficacious herbal products on much economical prices than synthetic products.

Dr Sushil Agrawal, Chairman and Dr Shivi Maini, DGM, Technical had given detailed presentation on the usefulness and efficacy of herbal products for profitable poultry farming. They informed the guests about the unique benefits of herbal products over the synthetic products. They appraised that Indian Herbs products are innovative and science based products, scientifically well testified for their safety, efficacy and mode of action. Indian Herbs is the originator of herbal concepts for use in poultry industry. Indian Herbs is the first company which has launched alternative of synthetic products in the prominent segments such as Choline, Methionine, Vitamin C, Vitamin E, Antimicrobial Growth Promoter, Immune Potentiator, Metabolic Stimulant, Respiratory Anti-septic, Anti-stress & adaptogen etc.

The Success of Indian Herbs products' efficacy is strongly supported by its outstanding R&D facilities, approved by the Ministry of Science and Technology, Govt. of India since 1986. Expert personnel coupled with sophisticated equipment provide solution for maintaining and improving our product quality. This has resulted in gaining acknowledgement in the form of ISO 9001:2008 and GMP Plus certification.

Products of Indian Herbs have undergone extensive, pharmacological, toxicological and clinical investigations. More than 200 scientists have been awarded Masters and Doctorate degree for their research work at Indian Herbs products and over 1000 scientific research papers have been published on these studies in leading scientific journals in India and abroad.

Looking into the harmful after-effects of synthetic additives & chemicals, the veterinarians, consultants and farmers all over the world are now taking keen interest in the use of herbal feed supplements and health care products and Indian Herbs is dedicated to promote the use of

natural products for the betterment of animal health and production performance. To achieve this objective, the company has developed a thorough expertise in blending the traditional knowledge of Ayurveda with modern research techniques to deliver completely safe, non-toxic, environment-friendly products to cater to the health and nutritional needs of the animals.

Recently, Indian Herbs had collaboration with premier foreign and domestic research institutes and universities of high global ranking for in-depth research on Alternate Choline supplement 'BioCholine' and Natural growth promoter product 'HerBiotic FS'.A research study on BioCholine based on transcriptomics and hepatic mRNA expression of key genes regulating intricate metabolic pathways in the liver was undertaken at University of Georgia, USA. Dr Shivi Maini, DGM (Technical) gave detailed technical presentation on underlying

mechanism of action of BioCholineto potentially regulate key allosteric effectors of glucose and lipid metabolism on basis of transcriptomics andto completely replace synthetic choline chloride in feed.

Herbs products namely Animunin, ImmuPlus, Herbal C, E-Sel Powerwere also elaborated during this session.

The participants had taken keen interest in the presentation and they

Indian Herbs also took key initiatives to conduct complete microarray of gut and metagenome profiling of gut for a herbal gut function modulator and natural growth promoter product 'HerBiotic FS' in a Salmonella infected broiler model. The research

appreciated the efforts of company for undertaking in-depth research based on latest techniques of molecular biology and genomics.

Mr S.C. Ghosh, Dy. Manager Sales - East Zone and Mr Parmartha Roy, Zonal

has been undertaken in collaboration of five premier research institutes in India. Glimpses of salient findings of research on HerBioticFS based on gene ontology of gut, metagenomics and quorum sensing was shared with the attendees of the seminar.Unique features and benefits of other Indian

Manager thanked all the participants for their active participation in the seminar.

It is high time that the farmers and consultants should support these eco-friendly cost saving natural poultry products for the common objective of profitable poultry farming.

Multi-Strains Yeast Fractions Product Helps Reduce Impact of Coccidiosis on Broilers

Blagnac, France: Lallemand Animal Nutrition confirms its commitment to poultry nutrition research at the XVth European Poultry Conference in Dubrovnik, Croatia. The company, sponsor of the event, presented six new studies on the benefit of probiotics, yeast derivatives and antioxidants in poultry nutrition, as posters and one oral presentation. Two of these showed for the first time the potential of **a multi-strains yeast fractions product to help reduce the impact of coccidiosis in broiler chickens.**

As resistance to anticoccidials is a growing concern for broiler producers, alternative strategies to help control coccidiosis are being evaluated. Nutritional solutions have been suggested as part of overall management programs. **Two studies conducted in partnership with Aristotle University of Thessaloniki** (Greece) have been performed to evaluate the potential of a multi-strains yeast fractions product in broilers, either alone or in combination with anticoccidials.

The study selected for oral presentation was done with 192 one day old chicks and aimed at evaluating the effect of the yeast product in combination with the anticoccidial salinomycin, in feed, on gut health and performance of broiler chickens. The birds were orally challenged with a mix of the three most common coccidian oocysts found in broilers.

The study showed that **the combination exerted a substantial improvement in intestinal health** in coccidiosis challenged birds:

- **Improved digestive microbiota balance**
- **Less severe intestinal lesions**
- **Higher gut villi**

The performance of the animals was also shown to be improved.

In the second trial, different doses of the multi-strains yeast fractions were assessed in the presence of different pathogen challenges (Eimeria acervulina, E. maxima, and E. tenella). Lesion scores were improved and coccidiosis related mortality was numerically reduced when the yeast product was supplemented in the feed. FCR was also improved. The trial showed that the multi-strains yeast fractions **can help birds to mitigate coccidiosis negative effect in a dose-sensitive manner.**

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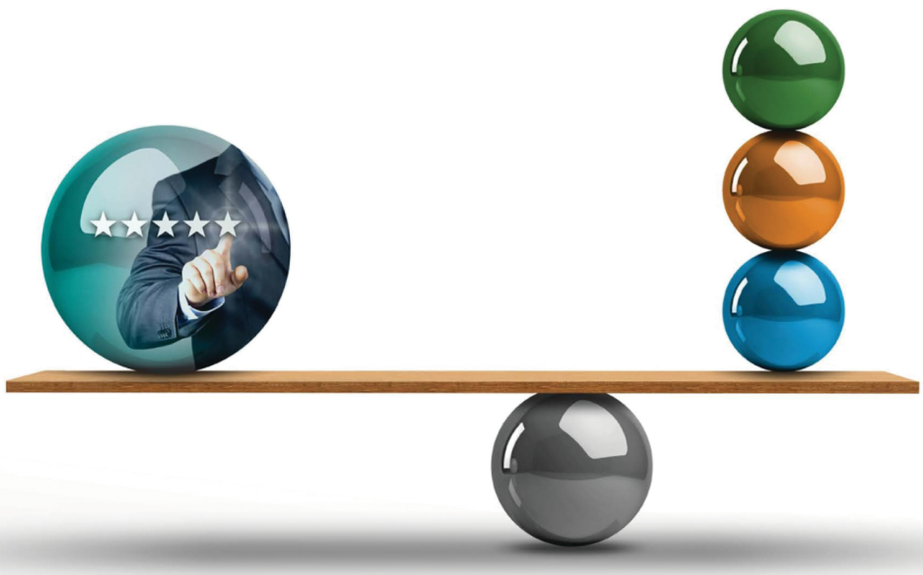

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Guinea Fowl Rearing for Meat Production: A New Avenue for Tribals of North-Eastern India

B. Ch. Debnath, T. K. Das, R. N. Dhore and A. Chakrabarti

College of Veterinary Sciences and A.H, R.K. Nagar, Agartala, Tripura (West Tripura)

Backyard poultry farming is traditionally practiced in North-Eastern states and it is ever fastest growing venture but in an unorganized form. The people of North-East preferably consume either pork or chicken, having about 10 kg meat/head/annum. Therefore, the rates of these commodities are ever increasing and may go out of the reach of the common man; hence, it is need of the hour to find out new potential alternative meat producing bird for future to come. The guinea fowl could be the better option considering agro climatic conditions of the region.

Guinea fowl is the indigenous game bird of Africa. The bird is reared in many parts of the world for its gamey flesh and eggs since, it has the taste similar to other game birds. The meat is lean, rich in essential fatty acids, having fine flavor resembling to wild birds. The meat and bone ratio is excellent, high yield of meat (around 80%). Besides, it has ornamental value. Meat is rich in vitamins and low cholesterol content. There are three famous domestic varieties of Guinea fowl viz. pearl, white and lavender. The purplish colored pearl is most commonly seen.

Breeds

There are many breeds of guinea fowl but most common are.

1. Numida meleagris- Red wattled guinea fowl, most common ,adopted worldwide
2. Numida ptilorhyncha- having collateral feather on upper part of the neck.

The mature common guinea bird weight about 2 kg, however, there is no much weight difference in male and female hence, cannot be differentiate between male & female bird on the basis of weight.

Characteristics and special features of guinea fowl

1. The head and neck are nacked, no feathers, but may have wattles. The male has much larger wattles than females.
2. The bird is timid, more closed living nature, gregarious in behavior than chicken. In panic make crowding together, may be dangerous & inflict heavy losses. Keeping darkness and presence of perches reduces the bird's timidity. They hide in one corner and remain quiet in fear. Therefore, in reduced light intensity large number of guinea fowl can be raised, either cannot be reared near residential area due to noise pollution. This habbit is advantageous for the North-East environmental condition.
3. The guinea fowl can be reared in free range system, but may causes heavy damage to the nearby crops. It is because, while feeding, it doesn't scratch with its claws, but uses its beak for tearing off with vigorous head movement. This feeding behavior causes tremendous feed wastage from feeders.
4. The guinea fowl is more resistant to the heat than chicken; the elevated temperature is required for raising guinea fowl chicks. It is more tolerant to transportation stress than chickens.
5. It is hardy, adapted to many agro-climatic conditions, disease resistant, do not required expensive elaborated housing, excellent foraging capabilities, better utilization of non- conventional feeds than chicken, more tolerant to mycotoxins and aflatoxins, lays hard shell eggs causes minimum breakage.

Management

There are mainly three systems of rearing of guinea fowl i.e. Free range, Semi-free range and Intensive system

1. **Free range:** It is followed by resource poor farmers, under this system birds are let loose and only water is provided besides protection and health cover.
2. **Semi Free range:** Under this system chicks called as keets are housed @ 1000 keets/24 m2 area for first three weeks of life ,subsequently transferred to rearing house having 40 m2 shelter and aviary of 200m2 with pearches connected to open space enclosed by wire fencing of 1.5-2 m height. In this system of rearing pinioning of keets is essential for breeding purpose. This is to prevent the birds from flying, by making them imbalanced. by tying wings together or clipping of one wing.

Highlight Points

Guinea fowl is reared for its gamey flesh and eggs since it has the taste similar to other game birds. The meat is lean, rich in essential fatty acids, having fine flavor resembling to wild birds. The meat and bone ratio is excellent, high yield of meat. Besides, it has ornamental value. Meat is rich in vitamins and low cholesterol content. This article discusses about possibility of Guinea fowl rearing among tribals of North-East India for meat production. Such attempt may promote the poultry sector for the benefit of tribal farmers of north-east India in order to sustain their livelihood.

3. **Intensive rearing:** The performance is better in this rearing system, birds do not have access to an outdoor enclosure, for this less light intensity dark houses may be used. Guinea fowl are raised for breeding on soil or in house. The densities for rearing on soil are 3-5 birds per m2 equipped with perches. However, in modern breeding units guinea fowl are usually reared in house and artificially inseminated.

Sexing of guinea fowl is tricky job, since the male and females differs so little in appearance hence, difficult to distinguish from each other. The sex may be distinguished by the cry of birds after about 2 months of age and by the larger helmet and wattles and coarser head of the male.

Table 1 Some production traits of guinea fowl

Egg laid per year (number) - 100
Egg weight (grams) - 40-45
Egg fertility - 75-80
Hatchability -75-80
Egg weight/body weight (%) - 2.8
Mature weight (kilograms) - 1.6-1.7
Sexual maturity age (days) -186
Incubation period (days) -26-28
One-day-old keet weight (grams) -24.62

Source: *Fani et al. (2004)*

Management of breeding stock- Guinea hens start laying in the Jan.-March with increasing day light and it continued to next 6–9 months. The egg laying period can be manipulated by adjusting artificial lighting hours. Adult breeding birds are usually allowed to free range. However, in organized form they are kept in the confinement during laying period with wire floored run porches. There is tendency to mate in pairs, if male and females are in equal numbers. The artificial insemination is popularly practiced under modern management. The domesticated roosters (Gallaus sp.) are usually crossed with guinea hens, such cross breds are as large as fowl parent and retained gamey flavor of meat.

The crosses are known as 'Guin-hens' are sterile and look like turkey cross. The mating ratio is 4-5 or 6 females per male to obtain fertile eggs with good hatchability. However, 1 male to 5 female ratios gives optimal fertility for 2 to 3 seasons. A breeding mash of 22 to 24% protein should be given to breeding stock about 1 month before laying for better hatchability.

Egg Production- Guinea hens start laying eggs at 16-17 weeks of age and lay about 100 egg per year under good managemental conditions for 2 –3yrs. The small flock kept for 4-5 years may lay 30 eggs and then goes broody. Under tropical condition laying occurs only during rainy season for few weeks. A clutch size is 12-15 eggs are common. Guinea fowl egg is smaller than the hen egg, of an average weight of 40g of very thick egg shell. It is very difficult to test for fertility by candling method. Hence, artificial hatching under incubation is challenging task. The incubation period is of 26 to 28 days and average wt. of day old keets is 24.62 g, while live wt. of 1.48 kg achieved at 16 weeks of age.

The eggs for hatching should be collected 4 times in a day. However, in hot climate more frequent collection increases the hatchability percentage. The eggs are stored at 15.5-18.50 C & RH 78-80%. Holding of eggs more than 7 days before setting for hatching reduces the hatchability progressively with increased storage time. The shell quality of younger stock is better than older stock. The morning eggs have poor hatchability than eggs laid late in day time.

The incubation period of guinea eggs are 26 to 28 days and 24 to 25 days for cross bred. It is common practice to use chicken hen for hatching small number of guinea eggs .The guinea hens are normally too wild to set, except in nest, where they become broody. Usually 12- 15 eggs are set under guinea hen and 20-28 eggs may be set under large chicken hen. A typical phenomenon observed that, as soon as the some guinea keets hatched out and began to move; the guinea hen leaves the nest without caring for other unhatched eggs.

The forced draft incubators are used for hatching at 37.5 to 37.20C with 57-58% humidity. The incubated egg must be turned regularly for minimum of three times in a day for first 24 days, for pure guinea fowl and 21 days for crosses.

The poultry brooders are suitable for keets. The brooding operated at 370C and 37.50 C from day old subsequently reduced by 40C each week. The stocking density should be about 20 keets/meter square at day old stage and 10 birds/m2 under intensive rearing system. If reared in broiler style, housing up to 14 weeks of age they require about 900 cm floor space per bird.

Table 3 Body weight, feed intake and conversion rates during keets growth

Period (weeks)	Weight gain (g)	Feed intake (g) (x)	Conversion rates (x)
0-4	380	670	1.76
5-8	590	1090	2.86
9-11	400	1735	4.34
12	110	630	5.73
13	100	635	6.35
0-11	1370	4095	2.99
0-12	1480	4725	3.19
0-13	1580	5360	3.39

x- Ration assayed at Metabolisable energy – 3000 kcal, ambient temperature 200C

g- Grams

Source: *Batty (1992)*

Nutrition- The guinea fowl is basically scavenger bird and eats variety of foods like weed seeds, waste grains fallen on ground at the time of harvesting of crops, also fruits, berries, seeds, grass, spiders, insects, worms , molluscas and small frogs etc. Therefore guineas are popular in eliminating insects from home gardens; because they do not scratches dirt like chicken hence causes less damage to the garden.

The starter diet contains 24% crude protein and given for 4 weeks, followed by Ist grower diet of 20% crude protein for 8 weeks, thereafter IInd grower diet of 16% CP up to 14-16 weeks. At this stage they become of 2 kg live weight, either marketed or selected for breeding purpose. The breeding stock should be given breeding diet two weeks before actually laying expected, besides foraging.

The guinea fowl consumes an average 43 kg feed in its life time, out of which 12 kg during growing and 3 kg during laying period. The nutrient content of guinea fowl feed is close to the chicken feed, except slightly higher level of lysine and methionine requirement for growth and laying. The feed conversion ratio (FCR) under intensive rearing system are between 3.1 and 3.5 for slaughter age at 12 to 13 weeks and mean live weight of 1.2 to 1.3 kg . The young stock of male and female is ready for table purpose at 12- 16 weeks of age, weighing about 1.25 and 1.2 kg respectively. It is recommended that breeding stock should be allowed to grow more slowly and naturally.

Table 1: Recommended Nutrient composition of Guinea fowl diet

Sr. no	Nutrient	Starter	Grower		Breeder
			I	II	
1	CP(%)	24.25	20	15	16
2	ME(MJ/Kg)	11.13	12.13	11.30	12.13
3	Ca(%)	1.2	1.00	0.80	3.0
4	P(%)available	0.50	0.50	0.40	0.40
5	Na(%)	0.18	0.48	0.18	0.18
6	Arginine(%)	1.5	1.20	0.80	91
7	Lysine(%)	1.30	1.20	0.82	0.83
8	Methionine (%)	0.52	0.45	0.34	0.55
9	Meth + Cyst(%)	0.91	0.80	0.61	0.74
10	Tryptophan (%)	0.22	0.22	0.15	0.17
11	Histidine(%)	0.54	0.45	0.35	0.41
12	Leucine(%)	1.50	1.40	1.10	0.80
13	Isoleucine(%)	1.0	1.70	1.30	0.73
14	Phenylalanine(%)	1.0	0.93	0.74	0.74
15	Phe+Tyrosine (%)	1.50	1.4	1.1	1.00
16	Threonine(%)	0.93	0.81	0.62	0.71
17	Valine (%)	1.10	1.00	0.75	0.72
	Vitamines (per Kg Diet)				
18	Vit.A (IU)	5000	4000	4000	5000
19	Vit. D3 (IU	2500	2000	2000	2500
20	Choline equi. (mg)	1000	750	750	1000
21	Thiamin (mg)	2.5	2.0	2.0	2.5
22	Riboflavin (mg)	4.0	3.0	3.0	4.0
23	Pyridoxine (mg)	5.0	4.0	4.0	5.0
24	Pantothenic acid (mg)	12	9.0	9.0	12
25	Vitamin B12(mg)	0.012	0.01	0.01	0.012
26	Folic acid (mg)	1.0	0.8	0.8	1.0
27	Biotin (mg)	0.25	0.20	0.20	0.25
28	Niacin (mg)	60	40	40	60
29	Vitamin K (mg)	2.0	1.5	1.5	2.0
30	Vitamin E (IU)	25	15	15	25
	Trace Minerals (per Kg diet)				
31	Manganese (mg)	70	55	55	70
32	Iron (mg)	80	70	70	80
33	Copper (mg)	10	8.0	8.0	10
34	Zinc (mg)	80	60	60	80
35	Selenium (mg)	0.30	0.2	0.2	0.3
36	Iodine (mg)	0.40	0.4	0.4	0.4

Source: Ensminger et al. (1990); Leeson & Summers (1997)

Marketing- Guinea fowls are ready for sale at 15 weeks and sold between 16 -18 wks age with live weight of about 1.25 to 1.47 kg (Dressing weight: 1.02 and 1.25 kg). However, most appropriate market age is at 12 weeks of age. Guinea fowl meat is dry and leaner than chicken meat and has gamey flavor. It is specialty meat. There is also some demand of live birds as game birds, kept as hobbies by the people.

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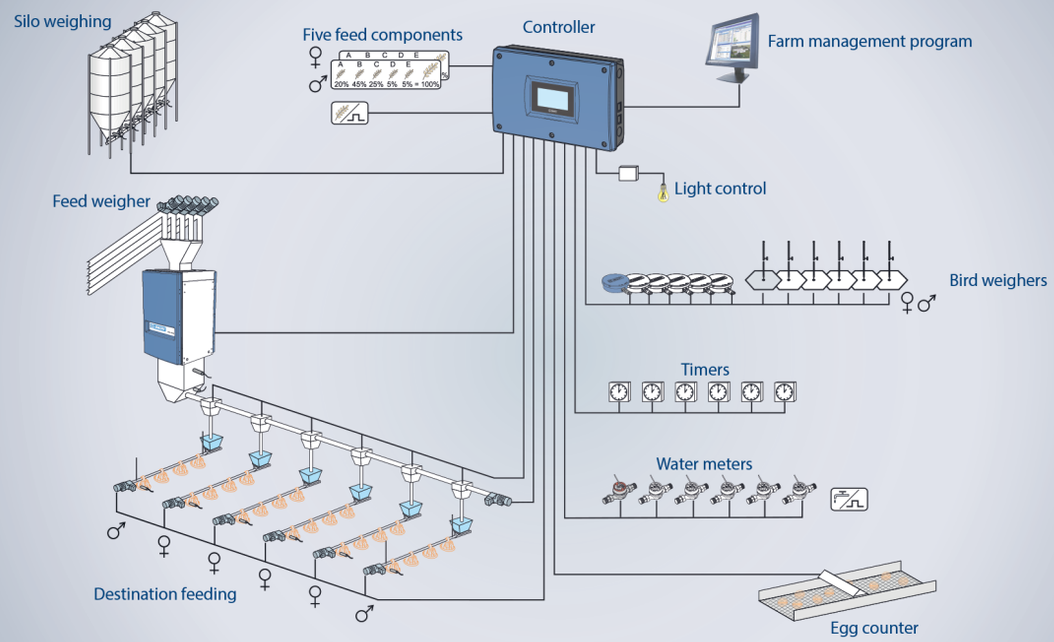

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Climate for Growth

Fundamental Rules to Keeping Backyard Chickens

Claire Woods

The first stage to raising healthy chickens is deciding why you want chickens. Some people start a small flock of chickens purely for the eggs, others for meat and some choose to keep them as therapy chickens. It's important to answer this question first because this will ensure the selection of a suitable breed which will meet your expectations and needs, since there wouldn't be much sense in choosing a broiler breed of chicken only to be disappointed when it doesn't lay enough eggs for you. Deciding why you want chickens at the start will also allow you to properly set up your backyard for the appropriate number and types of chickens.

Next up is water. In my experience the single most important thing needed to keep your backyard chickens healthy is fresh and clean water. This doesn't need to be fancy; you can use a simple drinker. The key here is making sure each day the water is changed so it is fresh. Also during winter you need to ensure the water doesn't freeze over. If you leave your chickens without water for any period of time it can significantly impact their egg laying and throw them off for a week or two.

Highlight Points

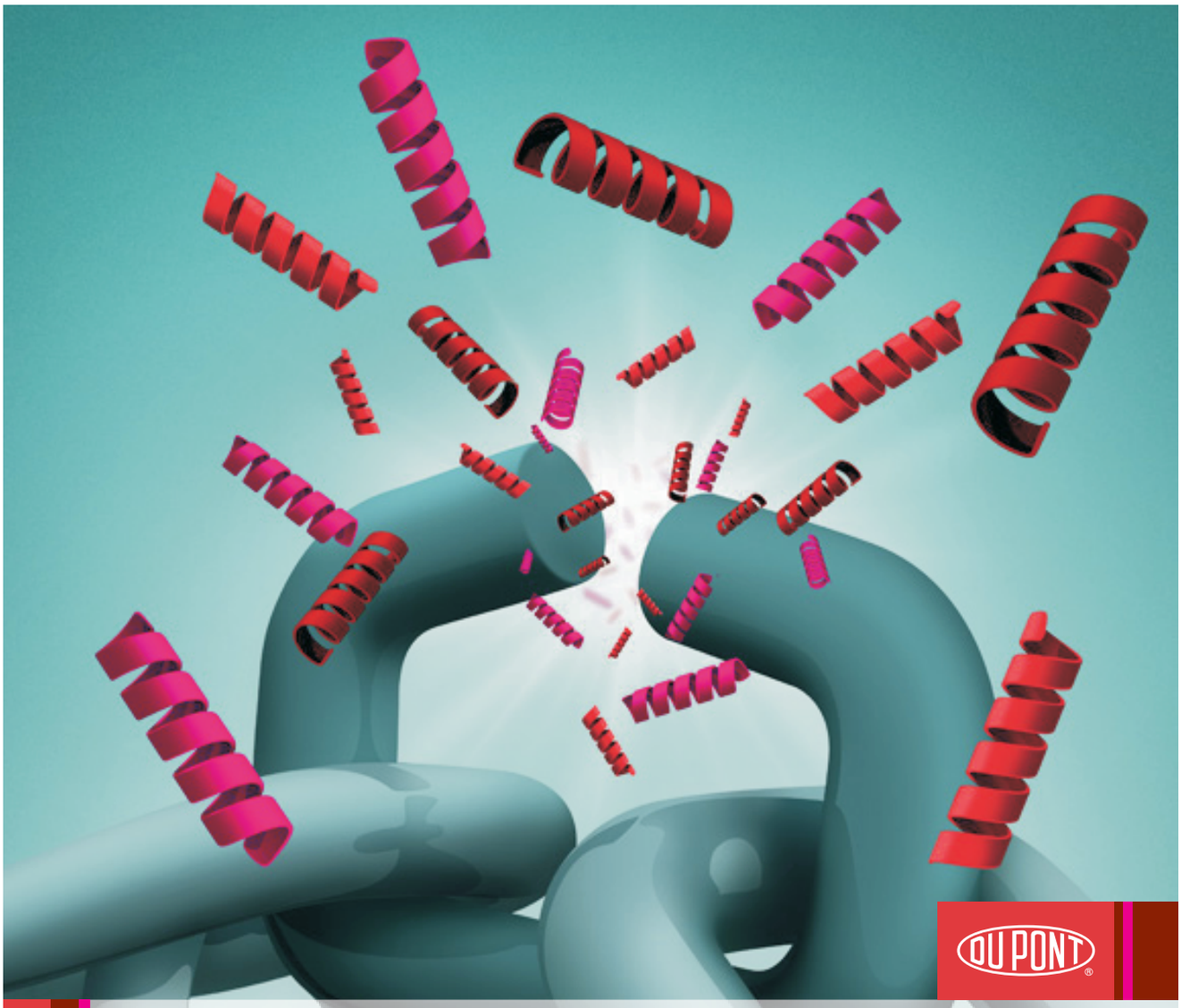
To a first time chicken keeper, the thought of keeping your flock safe and healthy can seem daunting. However, experienced flock owners will tell you that, once you understand the basics, chickens will largely take care of themselves. Experience has taught that there are five key things that backyard chickens need to be healthy.

Behind water is food. Fortunately in today's age this doesn't need to be complicated. You can use a high quality layers pellet; this should make up the core of their diet. You can give them the occasional treats from time to time (e.g. broccoli, apples and oatmeal etc…) but the pellet should make up the bulk of their diet. The pellets contain all the key macro nutrients, vitamins and minerals a hen needs to be healthy and lay eggs.

Next up on my list of fundamentals to raising healthy backyard chickens is shelter. For the backyard flock a small coop will suffice. You need to make sure your coop is dry, insulated and provides some form of ventilation. Chickens aren't fussy they don't expect a palace so if you're building your own coop it doesn't matter if it isn't the most intricate of homes. They won't even complain if the walls aren't straight

The final step to raising healthy chickens I'd like to share with you is cleanliness. The exact cleanliness routine you need to follow will vary depending on your individual coop/run setup and the number of birds you have in your flock. However for a typical setup and flock of 12 birds a quick daily clean-up and more spirited weekly clean-up will be perfect.

Your daily clean-up can be as simple as removing the poop from the coop and nesting box areas. Then on your more in depth weekend clean-up you can remove the bedding and place fresh bedding. Failure to do this is one of the biggest reasons why chickens get ill. Remember prevention is much easier than finding a cure.



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What Happens to Chickens at Processing Plants?

It is important to take care of the birds that are received to ensure their welfare and to optimise the saleable product yield and quality during the process: carcass downgrading or condemnations can be very costly. The purpose of this article is to emphasise the importance of correctly addressing quality issues that may arise after the broilers have been received at the processing plant. Doing so will guarantee bird welfare, as well as a profit for the producer and a desirable end product for the consumer.

Arrival at the plant and lairage

After the birds arrive to the plant, they are typically weighed and placed in lairage. The lairage time should be less than 2-3 hours to prevent weight loss (shrinkage), and should provide protection from the sun, at a minimum, and be equipped with fans as well as evaporative cooling systems to maintain bird comfort and welfare.

Unloading and shackling

At this point in the process, extreme care and a high regard for bird welfare is needed to avoid injury and maintain carcass quality. The birds are either manually removed from the individual transport crates or drawers for shackling or unloaded mechanically by tilting transport modules onto a conveyor belt that transports them to the shackling area. In either case, care should be taken to avoid carcass damage (especially wings). The shackling area of the processing plant is one of the busiest in terms of labour due to the number of birds processed on a daily basis and the manual procedure of placing birds on the shackles. Employees must work quietly, calmly and efficiently to ensure that all birds are shackled properly while maintaining bird welfare. Broilers should always be handled with care by individuals who have been trained in the correct shackling techniques.

Figure 1. Example of a correctly shackled bird hung under blue light

Light levels in the shackling area of the processing plant should be kept low to keep birds calm. Under low light intensities, birds are calmer and less likely to become excited and accidentally injure themselves. Blue lights can also be used for the same purpose (Figure 1). Correct size and spacing of shackles for the weight of the birds processed can facilitate the process and reduce handling injuries. The time from the shackling area to the stunning cabinet should not exceed 60 seconds, and breast rubs should be utilized to keep birds calm.

Stunning

Stunning renders the bird unconscious and facilitates proper bleeding. Correct stunning ensures bird welfare and carcass and meat quality. Processing plants typically use water-bath electrical stunning or gas stunning; both are viewed positively from an animal welfare point of view.

Electrical stunning systems vary, but electrical stunning is typically performed in the range of 12-150 milliamps (mA) of electrical current (alternating current (AC) or direct current (DC); varying in wave form and frequency) per bird for the duration of 2-11 seconds. Final meat quality and bird welfare may become compromised if the voltage, frequency and duration of application are not performed correctly. The depth of unconsciousness increases with increased voltage, but carcass quality may also be reduced. High voltages can cause wing and muscle haemorrhages. However, if the voltage is too low, birds may be rendered only partially unconscious and can become excited, leading to muscle tension and insufficient bleed-out.

Carbon dioxide is the most common gas used for stunning. It is important for bird welfare that birds are gradually brought into contact with carbon dioxide. Gas stunning systems using other gases (oxygen, nitrogen and argon), as well as their combinations, have also been developed. With gas stunning, advice from qualified experts should be sought to determine the correct flow rate, concentration and gas or mixture of gases to use. Carcass damage can be a problem if the gas induction phase is not properly controlled.

Bleeding

Correct neck cutting is integral to the speed and adequacy of the bleeding process. Bleeding is mostly a gravity-driven process that is time dependent. The recommended bleeding time is between 90 to 150 seconds. Poorly bled carcasses exhibit diffuse redness, which can lead to downgrading or condemnation of the whole carcass (Figure 2). Proper bleeding not only ensures carcass quality, but also significantly decreases the amount of blood in the scalder and drains, thus decreasing the organic load of the waste water.

Figure 2. An example of poorly bled carcass leading to whole carcass condemnation

Scalding

The purpose of scalding is to wet and loosen the feathers prior to de-feathering. Carcasses

Highlight Points

The processing plant is the midway point in the farm-to-fork food chain. The goal for processing plants is simple: transform healthy flocks using well-maintained equipment, operated under sanitary conditions, and with effective food safety systems, into safe and wholesome poultry products; quality, food safety, animal welfare and economics are all inherent in this process.

are immersed into hot water for approximately 1 to 3.5 minutes, depending on the type of scalding required. Most commonly, soft (52-54°C, 125-130°F) scalding temperatures are recommended for yellow skin (skin cuticle remains intact), and medium (55 -57°C, 131-135°F) or hard (54 -60°C, 130-140°F) scalding temperatures are used for white skin (cuticle removed), to achieve the desired skin colour. If the scalding temperature is not properly controlled, the skin colour may appear blotchy (uneven cuticle removal) or the breast fillets can have a "cooked" appearance (Figure 3). If the temperature is too low, it can cause "barking" or uneven removal of the skin cuticle (Figure 3).

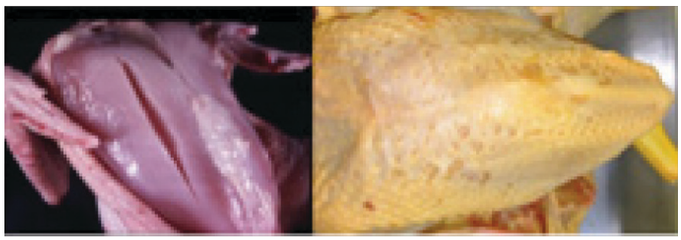

Figure 3. Over-scalded breast (left) and skin barking; uneven removal of the skin cuticle (right)

Proper agitation of the scald water (through the use of water pumps or addition of air pumped into the scald tank) ensures efficient wetting of the feathers. Multi-tank, counter-current flow scalders are very effective in the removal of dirt and organic matter from the carcass and ensures carcasses are progressively exposed to cleaner water. This practice is important in preventing cross-contamination. The rate of water flow should also be high (minimum of 1-2 litres per bird) to reduce organic build-up in the scalder tanks. The use of pre-scald washers and scrubbers has been effective in removing adhering faecal material on pelvic and pectoral feathers and preventing the faecal material that is typically expelled post-mortem from entering the scalders.

De-feathering

After scalding, the birds immediately enter the de-feathering machines in which rotating disks with rubber fingers remove the feathers from the carcass. However, if the rubber fingers are not maintained in the de-feathering machines, improper feather removal and damage to the carcass can occur (broken wings, skin and muscle tears and carcass bruising). Any damaged, worn, broken and missing rubber fingers in the de-feathering machines should be replaced daily to assure a proper "break-in" period and that carcass damage does not occur. Multiple de-feathering machines (usually 3-6) are used to target and remove feathers in different parts of the carcass.

Evisceration

After de-feathering, head and feet removal, and washing, carcasses are transferred to the evisceration shackles. Evisceration is one of the most critical points for preventing carcass contamination during processing. If the broilers have not had long enough to empty their digestive tract before processing and if there is viscera damage during evisceration, then the likelihood of carcasses contamination with the contents of the digestive tract is increased. Each step of evisceration, from the opening of the abdomen to viscera and crop removal, is critical and must be monitored continuously. Timely equipment maintenance and adjustments are extremely important to reduce and/or eliminate visible contamination. Carcass washers (using chlorine where allowed), strategically placed in points of likely contamination, are beneficial in terms of prompt removal of contamination. The harvesting of giblets (heart, liver, gizzard, and necks) is done following evisceration through either manual or automatic processes. Harvesting is again a critical area of contamination and cross-contamination that requires constant oversight. The extent of bacterial load on the final product is an extremely important parameter, in addition to continuous maintenance of the cold chain, in determining the shelf life of fresh poultry.

Carcass chilling

The two most common methods of carcass chilling are water immersion and air chilling. Immersion chilling involves placing carcasses into a counter flow water system at 0-1°C (32-34°F) for 1.5 to 3 hours, depending on carcass weight. The aim is to reduce the deep muscle temperature to less than 4°C (40°F) to inhibit the growth of microorganisms. Where chlorine is allowed to be used, one of the key issues in water immersion chilling is to maintain a free chlorine level of about 5 ppm to reduce the likelihood of cross-contamination. Maintaining this level can be difficult, since large numbers of birds entering the chiller introduce organic material that decreases the levels of free chlorine. Overflowing water chilling tanks with clean water (2-3 liters per bird) and using multi-stage counter current chilling systems can help reduce organic load. Another factor is the pH of the water. In areas where chlorine is allowed to be used, chlorine is more effective at or near a water pH of 6.5. Organic acids (ie, citric acid) are commonly used to acidify the water to enhance chlorine effectiveness.

Air chilling systems are growing in popularity, partly because there is less water uptake of the carcass than with immersion chilling and the potential for cross contamination is reduced. Air chilling systems are characterised by chilling carcasses in environmentally controlled rooms with forced cold air. Because the rate of heat transfer is much slower with air than in water, it takes much longer to air chill. Recently, carcass chilling systems involving both water and air chilling have become available (Figure 4).

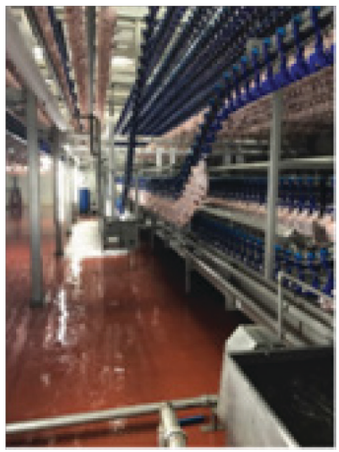

Figure 4. Example of a carcass chiller that uses both water and air chilling

Conclusions

The processing plant is the only profit centre in an integrated company! Process optimisation throughout the processing plant will have a positive impact on bird welfare, carcass quality, product safety, shelf life and profitability. It is important to understand, monitor and review all processing procedures regularly to ensure that they remain effective and sanitary, while maintaining bird welfare. This regular practice will help maintain optimal carcass quality, while decreasing carcass downgrades and providing the best possible product to the consumer.

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How to achieve successful coccidiosis vaccination

Ben Dehaeck

Global Product Manager Anticoccidials, Huvepharma, Belgium.

The severity of infection will depend mainly upon the number of infective oocysts ingested, i.e. on the infection pressure in the poultry house.

Birds suffering from clinical coccidiosis will show typical signs like diarrehea, bloody droppings, increased mortality, decreased feed intake and impaired performance insufficient control of coccidiosis also leads to impaired growth and feed conversion ratio, without the presence of evident clinical signs, so called subclinical coccidiosis or coccidiasis.

Intensive methods of production of poultry greatly favor the reproduction of Eimeria. As a consequence, coccidiosis is a continuing problem requiring constant attention and, in the case of broilers, a need for continuous supplementation with anticoccidial drugs or coccidiosis vaccines. The latter is becoming more important in recent years as it can be an alternative to manage coccidiosis and it can restore sensitivity of the Eimeria species in case of decreased efficacy of the current registered anticoccidials. The prevalence of clinical coccidiosisis estimated at 5% and of subclinical coccidiosisat of 20% of the global poultry production. This demonstrates that under current production systems, coccidiosis is still a major issue.

Day-old chicks spray vaccinated with coccidiosis vaccine.

Coccidiosis vaccination

Coccidiosis control by means of vaccination is standard practice in breederand layer flocks housed in alternative systems. For vaccination live vaccines are being used, resulting in controlled contact, with minimal intestinal damage, with the different Eimeria species at an early age of life; the contact being necessary to establish immunity against the pathogenic field strains.

The reasons to consider coccidiosis vaccination in broilers (at least those slaughtered at younger ages, 6 weeks of age) are different. The main reason for vaccination in these broilers is not for immunity build-up, but for improvement of the sensitivity of the Eimeria field strains to anticoccidial compounds, the so called 'restoration of sensitivity' concept.

Furthermore, changing demands of retailers for specific labels, like ABF & NAE policies are, especially in the US, drivers for the increased use of coccidiosis vaccines in broiler flocks.

The success of coccidiosis vaccination is influenced by two important parameters; the intake of the vaccine immediately after vaccination and the consecutive cycling of the vaccine. Firstly, special attention must be paid to vaccine application.

In most cases, coccidiosis vaccine administrations are mass applications by spraying the vaccine on the birds (in the hatchery or at arrival in the poultry house), spraying on the feed or by adding it to the drinking water. Although individual application of coccidiosis vaccines (for instance by eye drop) is the golden standard for guaranteeing the correct dosing for each individual bird, it is rarely performed because it is very labor intensive.

Mass application, if not applied properly, might result in incomplete vaccination of a part of the population as not every bird will swallow equal amounts of the vaccine.

Coccidiosis vaccination in the hatchery using the spray methodhas long judged as a convenient and successful method to vaccinate chicks, with coccidiosis vaccines applied to day-old chicks using standard cabinets which have been set up to maximize droplet size.

In order to optimize chances for good control, it is important to take notice of

some specific guidelines during the application and in the management of the farm.

Highlight Points

Coccidiosis is an infectious disease caused by protozoa from the genus Eimeria. The parasite is host specific and has a direct lifecycle. Birds get infected by ingestion of live sporulated oocysts omnipresent in poultry houses. Once ingested by the chicken, the parasites invade and multiply in epithelial cells and hereby cause significant damage.

Seven critical steps of good coccidiosis vaccination

Correct application in the hatchery:

Temperature:

A coccidiosis vaccine contains live parasites and transport and storage of the vaccine should be temperature controlled. A coccidiosis vaccine is sensitive to temperature variation. The optimal

temperature for transporting and storage of the vaccines is between 2° and 8° Celsius.

It is advisable to monitor temperatures during transport and storage and any abnormalities should be reported. Extra care should be taken to ensure the vaccine is never frozen in transport or storage as freezing oocysts will kill them. Check for cold spots in the refrigerator.

Vaccine preparation:

The dilution should always be made according the specifications of the manufacturer for a specific vaccine. Preferably distilled water should be used as chlorinated water might have a negative effect on the viability of the parasite. In order to remove all the oocysts from the vial, the vial should be shaken before emptying and rinsed at least 2-3 times. Next to diluting the vaccine with water, a dye is added to the solution. The reason for adding a dye is to make the droplets more visible to the chicks and promote preening and in this way the intake of the vaccine. The dye should be diluted according to the manufacturer specifications.

Spray vaccination in the hatchery.

Application:

Use a clean spraying vaccine device which provides a droplets size of ≥100µm. In spraying devices containing a filter it is advised to remove the filter during vaccination. Once the vaccine solution is prepared it must be constantly mixed. Oocysts are heavier than water so they would sink to the bottom if not constantly kept moving (stirring can be done by means of air or magnetic rod).

It is very important that the oocysts are evenly distributed in the solution to ensure that each bird is vaccinated with the same dosage. When the chick crates pass the nozzles of the spray cabinet, the distribution of the spray should be carefully adjusted so that it covers the entire box (not too much or too little). This should be tested and adjusted before the first batch of birds pass through the spraying machine.

The volume for spraying one box of 100 chicks is usually around 25ml. The dilution of the vaccine is calculated

Spray vaccination in the hatchery

based on the number of chicks inside one box, the flow rate and the package of the vaccine. For example for boxes containing 100 chicks, a vaccine vial of 10,000 doses should be diluted in 2.5 litre of water, if the spray cabinet is spraying 25ml per box. This should be checked before and during application and adjusted when needed.

The spray should be coarse meaning that the chicks need to see the droplets. When a mist is created, the droplets size is set too small and the birds will be less stimulated to start preening. A coccidiosis vaccine is intended to be ingested and not inhaled. Important to note is that an unsprayed chick does not necessarily mean that it is not vaccinated. As described below, preening is essential for vaccine uptake.

Preening:

This is essentially the most important part of the vaccination as the chicks will actually be vaccinated by ingestion of droplets (= preening). When the box passes under the nozzles the birds get wet and colored (in case of using a dye). It is not because a chick has droplets on its head that it is vaccinated.

The real vaccination is obtained when they ingest the droplets from another chick in the crate! Important to allow preening is to have sufficient light after the vaccination ideally this light should not only come from the celling but also from the sideways.

If crates are stacked too high the lower boxes might not get enough light and the birds will not be stimulated enough to preen. Correct temperature between 24° and 27° Celsius without draft in the waiting room is also important to have sufficient activity for preening. Attention should be paid that the birds are completely dry before they get transported so it is recommended to have at least a time span of 15-20 minutes before loading the crates.

Coccidosis vaccines are live vaccines and in order to obtain a solid immunity, each of the different Eimeria species in the vaccine needs to replicate. Eimeria replication takes place in, for each species, specific region in the intestine. At the end of the replication new vaccine parasites are excreted and when these are again picked up by the chickens, a second wave of vaccine replication will start.

It has been demonstrated that a second and even a third contact with replicating parasites is necessary to obtain a solid immunity. This indicates the importance of the Eimeria species in the vaccine to be capable of multiplying themselves.

In order to allow this cycling of the vaccine, certain measures on the farm are advisable:

On Farm

Preparation of the poultry house:

Before entering new birds in the house it should be thoroughly prepared. Special attention should be given to the feeding and drinking lines. It should be carefully checked that no feed is left in the feeders and the silo's from the previous flock as this might contain medication and/or anticoccidials that might interfere with the vaccine.

It is paramount for the success of a coccidiosis vaccination not to have any kind of drugs in the feed that could kill the vaccine! The same applies for the drinking water. This is especially important in the first weeks after vaccination until solid immunity has been developed.

Next to this, if vaccination is done alternately with anticoccidials between flocks, one can optimize vaccination by doing, a cleanup (with chemical anticoccidial) the flock before as this will lower the coccidiosis infection pressure considerably, giving an advantage to the vaccine strains to dominate the poultry house.

Environment:

Both temperature and humidity are very important parameters for the cycling of the vaccine. Next to the general advice for good brooding management (CO_2:<2,000ppm,maximum 3,000ppm/NH_3: <10ppm/minimum 32°C at chicken height/ temperature of the floor: ideal: 30°C/ warm the house before placing the litter) these are specific requirements when coccidiosis vaccination is applied.

For optimal sporulation of oocysts a relative humidity in the house of 60%, dry matter content in the litter of maximum 80% and a litter temperature of minimum 25°C is advisable. For cycling of oocysts contact between excreted vaccine and the birds is necessary. This is guaranteed if broilers are floor reared and under normal commercial density.

Monitoring:

It is advisable to monitor the flock after vaccination. This can be done by performing necropsies or by doing OPG counts. It is expected to have high OPG counts after vaccination as this is crucial to allow the vaccines to cycle. AS for necropsies the ideal age of the birds to check for coccidiosis lesion would be between 15 days of age until slaughter age.

It can be expected to see some coccidiosis lesions as the birds received the parasite but the scores should not be too high and they should disappear early (earlier than normal) as the vaccine strains have a shorter life cycle and will induce lower lesions.

Monitoring should be done regularly and any deviation reported to the manufacturer.

Conclusion

Coccidiosis vaccination in broilers is becoming increasingly popular. Crucial for successful vaccination is a correct application and management afterwards to allow cycling of the vaccine.

Up To 13% Gain in Production Capacity Due to a Liquid Feed Additive

Fylax Forte HC proves why moisture management is key to profitability

Dr Swamy Haladi, Feed Additive Manager, Trouw Nutrition India

When added to feed material, the feed additive Fylax Forte HC compensated moisture loss during the production process by up to 1.5%, increased production capacity by up to 13%, and reduced energy use by as much as 12%.

Why Moisture Management is Important

Variability in the final feed product has an impact on profitability. One of its main causes is moisture lossduring thegrinding process. A consistentfeed input to the pelletizeris better for the machinery and helps ensure a smoother production process.

The moisture levelof raw material drops during grinding and mixing and increases during conditioning. The addedsteam, however, will be flushed off again while being cooled. The result is a loss of moisture of about 0.5-1% in the finished product compared to the initial raw material, leading to a loss of 5 to 10 kg per tonne of feed. Losing moisture means losing money.

How Fylax Forte HC Works

A hydrating solution of water in combination with Fylax® ForteHC acts as a lubricant for the pelletizer. This reduces friction in the die and lowers its resistance, thereby reducing energy consumption. The production process also runs more smoothly and efficiently, due to a lower risk of blockages. It also compensates for the moisture loss and all of this results in an increase inproduction capacity while pellet quality is maintained or even enhanced.

Surfactants inside Fylax Forte HC have the ability to reduce the surface tension of water, allowing better penetration and improved distribution. Thislubricating effect allows steam to penetrate more easily into the feed particles during the conditioning phase and lowers press resistance during production. This makes the process more efficient, while increasing throughput. In fact, we've achieved improvementsof up to 1.5% in moisture profile and up to 13% in production capacity, and have reduced energy use by up to 12%.

Assuring Feed Quality

The added free moisture in feed assures optimal circumstances for mould growth. This is a persistent problem if the feed is stored for several months, as the nutritional quality deteriorates. Moulds consume the main ingredients in feed materials, resulting in reduced starch and protein content and poorer palatability, which may affect animals' feed intake. Moulds are also able to produce mycotoxins as secondary metabolites. Even at low levels, thesemay pose a serious threat to animal and human health.

To inhibit mould development and the possible future generation of mycotoxins, Fylax Forte HC contains activated propionates held in micelles. This combination of micelles and organic acids is very effective. The activated propionates are able to penetrate the strong, thick cell wall of the moulds by creating porosity in the cell membrane. This in turn allowsthe organic acids to enterthe cell, disrupt the DNA structure and exhaust the mould cell. To ensure a long-lasting protective effect, the organic acids are chemically buffered to minimize evaporation.

About Trouw Nutrition

Trouw Nutrition, a Nutreco company is part of the SHV Group. Trouw Nutrition, a global leader in animal nutrition, is a one stop solution provider that has been supporting farmers, integrators and the feed industry around the world for over 80 years.

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Avian stem cell – A model for stem cell therapy in mammals

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Stem cells are biological cells undifferentiated cells that can differentiate into other types of cells and can divide to produce more of the same type of stem cells. They are found in multicellular organisms. In mammals, there are two broad types of stem cells one is embryonic stem cells, which are isolated from the inner cell mass of blastocysts, and another one is adult stem cells, which are found in various tissues. In adult organisms, stem cells and progenitor cellsact as a repair system for the body, replenishing adult tissues. In a developing embryo, stem cells can differentiate into all the specialized cells from ectoderm, endoderm and mesoderm (induced pluripotent stem cells)but also maintain the normal turnover of regenerative organs, such as blood, skin, or intestinal tissues.

Avian embryos are a powerful model to study developmental and stem cell biology. They offer several advantages as a model for studying stem cell biology including their convenient size and ease of obtaining eggs, easy availability and easy of access to the embryo for manipulations, which among other applications led it to be used as a favorite model for toxicity testing since very early days . Avian species are the only non-mammalian group from which stable embryonic stem cell and germ cell lines have been established. Both chick embryonic stem cells (Ces) and chick embryonic germ (cEG) cells are considered to be pluripotent, but cES cells have been shown to be able to contribute only to somatic tissues and not to the germ line, while chick embryonic germ cells can contribute to the germ line. But little attention has been given to the biology of avian stem cells, especially regarding similarities and differences between chick embryonic stem (cES) cells, germ cells, and stem cells obtained from other embryonic and adult tissues.

The avian embryo spends its first 20 h or so in utero and the shell is deposited as the egg descends down the maternal oviduct. During this time, cell division occurs in a meroblastic pattern (open cleavage planes, from the centre out to the yolk) to generate a disc. By the time the egg is laid, the blastodisc comprises 20,000–50,000 cells arranged mainly as a single-cell-thick layer (epiblast) underlain by islands of more yolky cells (hypoblast — extraembryonic endoderm of the future yolk sac stalk). The entire embryo will arise from the centre of the epiblast, but it retains a remarkable ability to regenerate. Fragments of blastodisc can regenerate the entire embryo and re-establish polarity, suggesting plasticity of the embryo and perhaps pluripotency of the component cells. It is from these early (pre-primitive streak) stages of development that cell lines analogous to mammalian embryonic stem cells (ESCs) can be established from cells dissociated from the central epiblast and these cells can be perpetuated in cultureindefinitely.

The biology of germ cells in bird embryos is particularly interesting and unique. Primordial germ cells (PGCs) appear to arise at pre-primitive streak stages by ingression from the epiblast, joining the hypoblast cells below. The hypoblast forms a continuous layer of cells that then moves to the most anterior part of the embryo, under the pre-amnion, carrying the PGCs to this region, known as the Germinal Crescent. One remarkable feature is that primordial germ cells use the embryonic blood vasculature as a vehicle to migrate out of the germinal crescent, until they eventually settle in the embryonic gonads. Another unique characteristic of the gonads in female birds is that the right ovary regresses, and only the left ovary remains functional in the adult). However even male embryos have a greater number of PGCs in their left gonad .

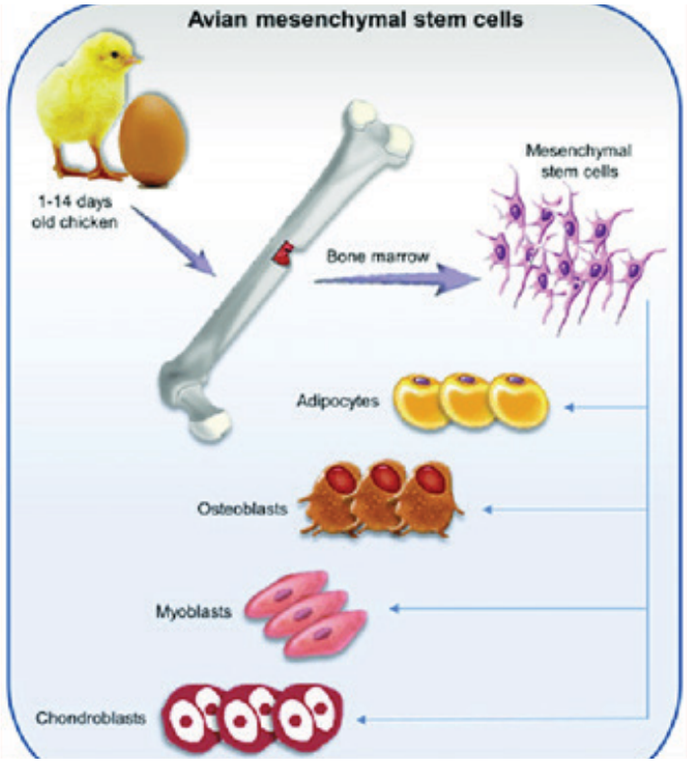
Establishment of long-term, self-renewing cultures of cells from pre-primitive streak stage embryos and from germ cells isolated from the blood vasculature or from the gonad. A few cell lines have also successfully been established from later embryos and adult tissues.

Conclusion

Germ cells are the only cell type in the body that can transfer genetic information to the next generation. Germline-competent stem cells can self-renew and contribute to the germ cell lineage giving rise to pluripotent stem cells under specific conditions. Hence far, studies on germline-competent stem cells have contributed to the generation of avian model systems and the conservation of avian

Highlight Points

- Chick embryo stem cells can be derived from variety of sources
- Chick embryo stem cells contribute all types of cells except germ line
- Germ cells can be isolated from embryonic blood or gonads
- Avian stem cells used for development of new breeds and transgenic chicken



genetic resources. In this review, we focus on previous studies on germline-competent stem cells from avian species, mainly chicken germline-competent stem cells, which have been well established and characterized. Chick stem cells can be obtained from embryos and maintained in culture. They can be derived from different sources at various stages of embryonic development. They have been demonstrated to be pluripotent because they can form embryoid bodies, differentiate into cell types from all three embryonic germ layers and contribute to somatic and germline lineages in chimaeras. They are comparable to mammalian stem cells which is offering a model for studying stem cell biology as well as being a tool for many applications in future.

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Monthly Average Egg Prices all over India and Prevailing Prices at Various Production Centres (PC) and Consumption Centres (CC) - Source: NECC

For September 2018

Name of the Zones	Month Average Price in Rs
Ahmedabad	369
Ajmer	348
Banglore (CC)	348
Chennai (CC)	352
Chittoor	345
Delhi (CC)	375
East Godavari	364
Hyderabad	332
Mumbai (CC)	383
Mysore	345
Nagapur	330
Namakkal	341
Pune	372
Punjab	350
Vijayawada	364
Vizag	364
West Godavari	364
Warangal	334

Prevailing Prices

Name of the Zones	Month Average Price in Rs
Allahabad (CC)	379
Barwala	353
Bhopal	363
Hospet	314
Indore	355
Jabalpur	364
Kanpur (CC)	389
Kolkata (CC)	402
Luknow (CC)	401
Raipur	361
Varanasi (CC)	398

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