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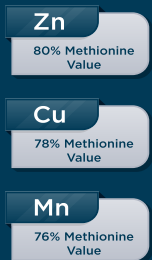
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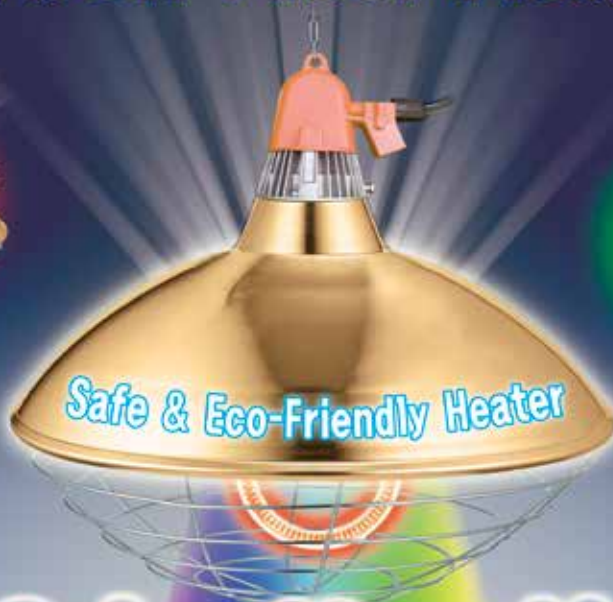
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News in this issue

EW Nutrition showcases..... 16
 Quadragen Vet Health 20
 Meeting Human Protein 24
 New Fermentation Plant worth..... 28
 Chicken and egg are not..... 32
 Novus top brass interacts 34
 Vietnam, Top Investment 42
 Biomin makes strong impact 46
 EW Nutrition launches 48
 National conference and seminar 51
 Grand participation of Indian 52
 Kemin's new year resolution..... 56
 MEYN changes gear 60

Articla in this issue

BIOSECURITY ON 62
 Beak Trimming: A Management 70
 Infectious viral diseases of 76
 ROLE OF POULTRY IN 80
 Crop Survey – India..... 84
 Safe anti bacterial..... 88
 The scenario of poultry..... 92
 Poultry Farming in 94
 Necropsy findings in 100
 Infectious bursal disease..... 104
 OPERATIONS, PROCEDURES..... 110

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EDITORIAL

Unity in Poultry fraternity

Rarely has poultry undergone the adverse phase for survival like those in the previous couple of years. The escalating feed prices, scarcity of maize and soybean, cage ban, hurdles in feed additive and pharmaceutical imports, rumors of antibiotic residues in chicken products etc.

To combat each of these problems, this industry had to go full throttle in unison to pave way for its survival. Presently the Poultry Federation of India, Compound Livestock Feed Manufacturers Association and many other state poultry associations came together to ward off the complicated situation. There were series of meetings of various segments of poultry and memorandum submitted to the Central Government leading to lots of discussions and understanding of various issues and many of the issues have already been addressed.

2018 and 2019 particularly, had been very bad for the poultry industry like-poor marketing conditions and the poultry rearing problems, saw many poultry entrepreneurs expelled out of business. These were the struggling days of the Indian poultry industry and some of the problems persist to this day.

Ultimately, it can be concluded that all the positive outcomes were a result of the unity demonstrated by this industry. This also gives a message that united we stand and divided we fall. We should intensify the membership drive to strengthen our associations, so that on vital issues it can act as pressure group to communicate with the Government and alleviate the problem that persists.

-Editor



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This way you can keep yourself updated on the latest know-how on poultry. The news and articles displayed are very informative.



Thanks

B.S. RANA

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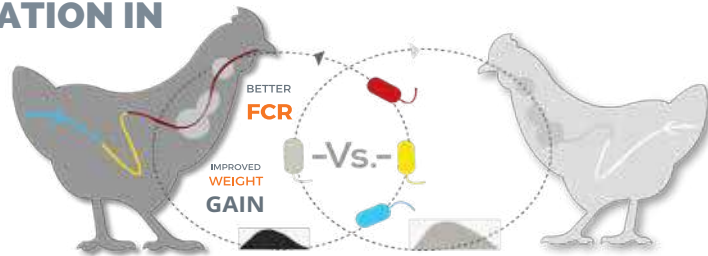


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EW NUTRITION SHOWCASES FARMER PROFITABILITY PROGRAMS IN POULTRY INDIA 2019



Mr. Michael Gerrits, Managing Director, EW Nutrition GmbH shared global experiences regarding the latest trends in the field of poultry industry. Dr. Shirish Nigam, Managing Director of South Asian subsidiary, extended a warm welcome to the visitors on the booth. The sales and marketing team explained the various programs to the visitors which are helpful in improving the farm profitability



■ Hyderabad:

EW nutrition participated in the 13th edition of Poultry India Show 2019 with full enthusiasm and vigour to showcase its functionally innovative and science-based programs for farmer's profitability enhancement. This was the

sixth participation in continuity, reaching out to scores of poultry farmers and stakeholders. EW Nutrition presence was unique as its Early Chick Nutrition program, was displayed in a booth located separately in open area.

EW Nutrition participated in the show with its presence in two booths, one highlighting

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the corporate vision and mission with its various programs and other, highlighting the application of Early Chick Nutrition program. EWN is dedicated to the cause of mitigating the impact of AMR and reduce the use of antibiotics and harmful substances in food animal. The programs pertaining to gut health and Toxin Risk Management were displayed to increase the awareness amongst visitors.

The open area booth was exclusively dedicated to EW Nutrition's Early Chick Nutrition program, where application of probiotics on newly hatched chicks was highlighted. The concept of "ACT EARLY" was promoted with different modes of application of probiotic based on the size of farm operations. This was demonstrated with the help of small hand held sprayer, a portable battery-operated sprayer for medium size farm operation and a large sized German Bio-spray or for larger operations. These applications are promoted under the name Gel@Chick.

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Gut Health Management (GHM), the widely accepted program of EWN for improvement of



feed efficiency and production was the focal point of attention. The visitors showed great zeal to understand global trials for improving gut health by using ACTIVO.

The queries related to mycotoxin challenge were addressed and also mycotoxin risk management program based on Master Risk Tool (www.masterrisktool.com) was showcased. The scientific approach to analyse the mycotoxin levels and their inter-relationships was highlighted. The risk evaluation was demonstrated and categorized as Severe, Moderate, Low or No toxin risk in raw materials and finished feed. The correct inclusion rate of toxin binder using the tool was also demonstrated. This scientific approach towards combating the myco-toxicity challenge was highly

appreciated.

One of the key attractions was the EARLY CHICK NUTRITION (ECN) PROGRAM a novel concept of programming the gut of newly hatched chick with multi-strain probiotic Progressive HatchPro. The application of probiotic was demonstrated in a booth which was a replica of the actual Indian poultry farms and various kinds of applicators were displayed based on the size of farm operations. The ECN Program booth attracted large number of enthusiastic visitors and industry stakeholders.

EWN's booths received very positive & encouraging response and value proposition of its different programs were highly appreciated and accepted by stakeholders.



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QUADRAGEN VET HEALTH CONDUCTS TECHNICAL SEMINAR ON MANAGEMENT OF E.COLI IN BIHAR



Mr. Dasaratha Reddy, G.M Sales & Marketing, introduced Quadragen VetHealth Private Limited with a Company profile video and welcomed all guests and speakers to the event. Sharing his vast experience of more than 25 years in the Poultry industry, he provided answers for the eager questions posed by the farmers and supervisors after the session

■ Arwal/ Barachati, Bihar

A one-day seminar on "Management and Control of E.coli in Poultry Farming" was organized at the community hall in Arwal and Barachati Districts of Bihar on the 5th and the 6th of December 2019. The primary objective of the seminar was to spread awareness and knowledge about the importance of preventing and managing Colibacillosis in Poultry farms. The seminar was chaired by the General Manager, Marketing and Sales

Mr. Dasaratha R. Reddy, Technical manager, Dr. Padmini Pradhan and Sales Manager East Mr. Chitaranjan Sahoo.

The meetings, at Arwal District and Barachati in the District of Gaya, brought to limelight the ever prevalent problem of Colibacillosis commonly called as 'E.coli' in the farms. During the technical presentation, Dr.Pradhan, provided an insight into Colibacillosis along with their practical signs, symptoms and disease conditions. At length the role of water

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in spreading the infection was discussed and the measures of control which necessitate reducing the pH of water to keep the bacterial population in control was emphasized. She elaborated on the problems associated with using antibiotics indiscriminately and the benefits of incorporating specialized essential oil and organic acids as a safe method to manage Colibacillosis effectively.

Further the importance of establishing immunity, the deleterious effects of free radicals on the performance and productivity was detailed and discussed. The concept of phytochemicals in Animal production and the role of revolutionary molecule Resveratrol was detailed. Quadragen has paved the pathway for the application of Resveratrol into Animal Health commercially. This molecule has a tremendous potential to remove free radicals from the physiological systems and this unique concept was introduced and explained at length to the participants. The farmers benefited with the one-to-one discussions regarding their farm problems and a short service of conducting P.M examination was done after the program at the venue.

Mr. Dasaratha Reddy, G.M Sales & Marketing, introduced Quadragen VetHealth Private Limited with a Company profile video and welcomed all guests and speakers to the event. Sharing his vast experience of

more than 25 years in the Poultry industry, he provided answers for the eager questions posed by the farmers and supervisors after the session.

Mr. Chitaranjan Sahoo, Sales Manager East, provided an outline and objective of the seminar to the attending guests. Later he cited practical examples and instances of successful implementation of proactive practices that control common water borne pathogens and

immunity-enhancing techniques for successful poultry farming.

Mr. Arvind, owner of Rahul Feed, at Arwal and Mr. Dinesh and Mr. Shailesh owners of Magadh Feeds, Barachati, welcomed the guests for the seminar and were instrumental for the success of the events in the respective places.

The seminar ended with a vote of thanks from Mr. Dasaratha Reddy and the session concluded with delectable local refreshments.



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■ Bengaluru

107th Indian Science Congress, an annual mega event, was inaugurated by Hon'ble Prime Minister of India, Sri. Narendra Modi, on 3rd January, 2020 at Gandhi Krishi Vignana Kendra (GKVK) campus, University of Agricultural Sciences, Bengaluru.

Dr. Mahesh P.S. Director, CPDO&TI as an invited Speaker, presented a talk at Indian Science Congress on the topic "Meeting human Protein needs through Poultry". In this presentation, Dr. Mahesh elaborated on present context of Global Burgeoning population putting a stress on need of food for the large human population on the globe. It was narrated that Scientists should produce for the next 40 years which was being produced for the last 8,000 years of agriculture. The global population has spiked from 2 billion in 19th Century to almost 9 billion in the present century.

India with a three trillion economy, with young population of 65% touching 1.35 billion population is a growing economy with agri-based attractive markets. Indian Animal Husbandry sector poised for a sustained growth has been No. 1 in Milk production (190 MMT), No. 3 in egg production (90 billion eggs) and No. 5 in Chicken Meat production (4.5 MMTs)

globally. The contribution from Animal Husbandry sector is estimated to be about 12 lakh crores with poultry contributing nearly 1.2 lakh crores to the GDP.

Indian food habits over the years have gone for a paradigm change with a more focus on carbohydrate centric diet, making more than 70% population as protein-deficient. A slide depicting what India has ordered from a private food aggregator was shown. It was well established that 2 million orders were placed from a single online app per day. Interestingly, Chicken Biryani topped as a most ordered food along with Chicken Fried Rice and Mutton Biryani in the list of consumer preferences. This is an indication as a tip of the iceberg of increased focus on quick foods over planned diet.

Human body consists of 60% as water, 20% as fat and 20% as protein elements other than the trace minerals etc. An adult individual, as per the scientific recommendation is required to consume 0.8 – 1.0 gm per kilo body wt. as a mandatory daily protein requirement. However, most of the Indian diets are not suited to meet this. Dr. Mahesh in his presentation showed the diet of Michael Phelps, World Swimming Champion, Usain Bolt, the fastest man on the earth and Hima Das, the Golden Girl of India making

During the talk, Dr. Mahesh narrated the egg consumption of Mexico (360+), Japan (340+), USA (270), UK (200), Iran (180) and India at 80 – 85 per capita egg consumption as of 2018 (Intl. egg commission). An interesting observation was also narrated about Bengaluru's daily egg requirement being 80 lakhs eggs per day for the 1.2 crore population. A statement was made in this regard as Bengaluru is USA in India (270 eggs).



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chicken and egg as their staple diet.

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Further, Dr. Mahesh narrated Indian Poultry Sector producing 1.1 crores broilers per day and 26 crores eggs per day with an year on year growth of 8 – 10 percent in broilers and 4 – 6 percent in layers. The trends in the market being broiler could attain 2 kilo body wt. at 32 days with an efficient FCR of 1.4 – 1.5, layer bird being an efficient producer of 330 eggs with a slim body wt. of 1.3 kilos annually.

In the presentation, the lessons from the



other sectors were shown as an example for marketing poultry produce. The success of branding in Atta, Corn snacks, potato snacks, coffee, tea and the branding of Amul was well

narrated. The trend-setters in the poultry sector namely Licious, Fresh to Home, Nandu's, Happy Hen Farms, Suguna Fresh, Venky's Express etc., are the leading examples of success in marketing poultry produce.

The present day generation spends 2.5 hrs daily in Social Media and 1 hour 11 minutes in youtube as per the report in Economic Times. The Tik-Tok is the most downloaded app in the present times against you tube. Poultry sector need to catch this and create ads in these social media platforms. It was advised that. Poultry sector can focus on corporatization of sports other than cricket like Football, Badminton, Table Tennis etc., wherein chicken and egg are highly essential to meet the protein requirements of sports persons.

Poultry Sector is aggressive in these years by publishing ads which draw the attention of the consumer by putting full page ads in the leading news papers. The top iconic figures are also hired for branding and marketing. Veterinarians in Poultry (VIP), an association of veterinarians, has set the trend of doing Eggchithon – Walkathon in various metros highlighting the benefits of egg and chicken. The suggestion was also made for use of Artificial Intelligence and Virtual Reality tools in schools to promote benefits of chicken and egg. The presentation concluded with a hope that Niti Ayog in its recent report is exploring for inclusion of Egg, Fish and Meat in PDS.



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(L to R) Mr. Tsvetan Simeonov, President of Bulgarian Chamber of Commerce and Industry, Dr. Boyko Takov, Executive Director of Bulgarian Small and Medium Enterprises Promotion Agency, Her Excellency Mrs. Eleonora Dimitrova, Ambassador of Bulgaria to India, Mr. Lyuben Kanchev, Deputy Minister of Tourism, Mrs. Mariyana Nikolova, Hon'ble Deputy Prime Minister of Bulgaria for Economic and Demographic Policy, Mr. O.P. Singh, Managing Director, Huvepharma SEA.

NEW FERMENTATION PLANT WORTH 150 MILLION EURO FROM BIOVET AND HUEPHARMA OPENS ITS DOORS IN BULGARIA

This project is part of the Huvepharma growth strategy, as a pharmaceutical company based in the European Union, operating on a global scale. The support of EIB, gave the company the opportunity to speed up its investments in Bulgarian production and scientific research and development, thus concreting the plans for further developing a fully integrated company with production facilities located in the European Union with sales on global markets

■ Pune

The new fermentation plant from Biovet officially opened its doors recently. The overall investment adds up to 150 million euro made over a period of less than 2 years.

The company is part of the Huvepharma Group, the leading European producer in feed additives, enzymes, probiotics and API's for industrial animal husbandry.

The Bulgarian company Huvepharma is a global pharmaceutical leader, focused on the production of humanitarian and veterinary medicaments, successfully offering its products in more than 100 countries worldwide.

For the official opening ceremony, in attendance were, the Prime Minister of the

Republic of Bulgaria, Mr. Boyko Borisov, the Minister of Economy, Mr. Emil Karanikolov, the Minister of Finance, Mr. Vladislav Goranov, the Minister of Environment and Water, Mr. Neno Dimov, the Chairman of the Energy Committee in the 44th National Assembly, Mr. Valentin Nikolov, Mayor of Peshtera Municipality, Mr. Nikolay Zaichev, Regional Governor, Stefan Mirev and many representatives from the central and local authorities.

This project is part of the Huvepharma growth strategy, as a pharmaceutical company based in the European Union, operating on a global scale. The support of EIB, gave the company the opportunity to speed up its investments in Bulgarian production and scientific research and development, thus concreting the plans

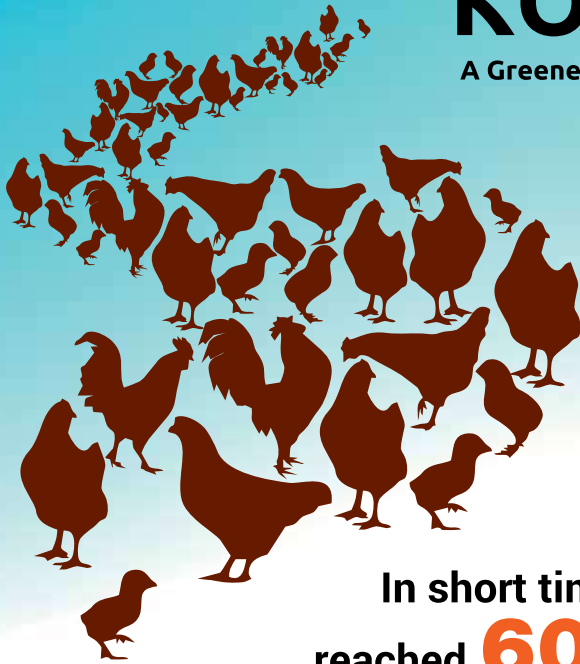


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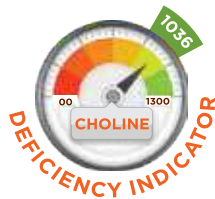
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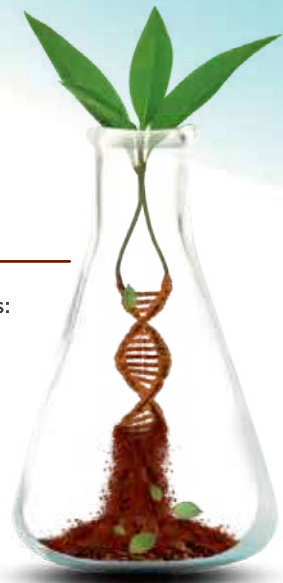
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for further developing a fully integrated company with production facilities located in the European Union with sales on global markets.

The new Fermentation plant is designed and built based on the company's more than 60 years traditions, experience, knowledge, adhering to all the principles of versatility and flexibility, using state-of-the-art equipment and technologies, and applying industry best practices and techniques.

The project was completed on green field, within 22 months and includes: a fermentation capacity of 3,500 m³ and workshops for processing and formulation of the products. The complete energy system for the power supply includes electrical substation, production of steam and compressed air as well as the production of technical and cooling water.

Huvepharma SEA (Pune) Pvt. Ltd. takes pride in being a part of this global growth story. Huvepharma EOOD has been keen on investing their time and technology in India. Huvepharma SEA has been instrumental in launching Huvepharma's product ranges from time to time. The past couple of years have seen India emerging as one of the first markets to launch many new products from the Huvepharma stable which are unique and with high potential.



Our latest offering to the Indian subcontinent region, such as Hygiene and Disinfection range for biosecurity at various stages in poultry, dairy as well as aqua, Dietics range for poultry, Performance boosters and Rumen modifiers for dairy, Intermediates for human medicines etc., are aimed at providing top quality, globally accepted, critically evaluated and regulatory certified products to the market to ensure food safety, traceability and boost customer profits.

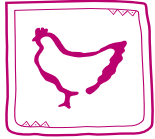
Reinforcing strong ties between India and Bulgaria, Mr. O.P. Singh, Managing Director, Huvepharma SEA recently had the opportunity to discuss various business issues at The Taj Palace Hotel, New Delhi and interact with the Hon'ble Deputy Prime Minister of Bulgaria for Economic and Demographic Policy, Mrs. Mariyana Nikolova, and the trade delegation that she headed on this visit to India, which

included Deputy Minister of Tourism, Mr. Lyuben Kanchev, Executive Director of Bulgarian Small and Medium Enterprises Promotion Agency, Dr. Boyko Takov, President of Bulgarian Chamber of Commerce and Industry, Mr. Tsvetan Simeonov, apart from The Ambassador of the Republic of Bulgaria to India, H.E. Mrs. Eleonora Dimitrova and Minister Plenipotentiary, Head of Trade and Economic Affairs, Embassy of the Republic of Bulgaria to India, Mr. Iliya Dekov.

Hon'ble Dy. Prime Minister Mrs. Nikolova was in India with the aim of identifying new initiatives and establish partnerships to further strengthen links between Bulgaria and India. It is notable that Huvepharma is also the largest Bulgarian business partner with India.

Speaking on the occasion, Mr. Singh expressed pleasure and gratitude to the Hon'ble Dy. Prime Minister for the Bulgarian Government's continued support and encouragement to the Huvepharma Group in its endeavor to upgrade and expand the production, research and testing facilities which bear a direct impact on the large animal health industry spread across the world. In his address to the esteemed gathering, he said "Food safety and qualitative food production must be supported with all scientific products and services for the Indian consumers ensuring emerging paradigm can be met".





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Condolence message

Mr Kalpesh Shah's death has come as a jolt to Poultry Punch was extremely close for so long in the industry. His company achieved great milestones under his capable guidance. He was a very kind human being and was loved by all he came across. He was a remarkable human being and very considerate and caring person. I pray that his soul rests in peace.

-Editor



CHICKEN AND EGG ARE NOT TOXIC: CENTRAL GOVERNMENT STUDY

■ New Delhi

Table 2: Commodity wise monitoring data (April, 2017 - March, 2018)

The Indian poultry industry has heaved a sigh of relief against the general notion that it contains toxic residues and which are detrimental to human health on consumption. A report on the toxicity of food products was released last month by the Federal Government's Food Safety and Quality Control Commission, the FSSAI, which mentioned that there is no toxicity in chicken, egg and milk.

So this report goes all against the said rumors of feeding excessive antibiotics and growth promoters by the poultry producers in India. Having cleared of the toxic residues, the Indian consumers of egg and poultry meat can now without any fear of health hazards, can go for consumption of all poultry products.

Commodity	Target of Commodity	Sample analysed	Samples with no detected residues	Samples with detected residues	No. of samples with detection of non-approved pesticides	Samples above FSSAI MRL
Curry Leaves	610	616	178	438	438	0
Fish/Marine	892	902	900	2	2	0
Fruits	2201	2274	1780	494	277	25
Meat/Egg	375	374	374	0	0	0
Milk	454	453	453	0	0	0
Oilseeds	36	36	25	11	11	0
Pulses	686	771	680	91	82	9
Red Chilli Powder	486	481	186	295	290	17
Rice	1217	1177	921	256	65	85
Spices	788	761	375	386	377	133
Surface Water	2028	2031	2004	27	27	0
Tea	180	180	143	37	5	0
Vegetable (Market)	6814	6670	5297	1373	985	140
Vegetables (Farmgate)	3023	5527	4643	884	627	96
Vegetables (Organic)	293	624	482	142	96	10
Wheat	804	783	709	74	42	8
Grand Total	20887	23660	19150 (81.0 %)	4510 (19.1 %)	3324 (14.0%)	523 (2.2%)



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NOVUS TOP BRASS INTERACTS WITH POULTRY MEDIA



Q1. Can you briefly describe the history of Novus and its business?

François Fraudeau: Novus was born in 1991 and at the time we were solely producing ALIMET® feed supplement, or HMTBa, a methionine hydroxy analogue. Over the next 15 years we focused on bringing this product to animal protein producers around the world. Then, little over a decade ago, we saw an opportunity to diversify our product offerings through both in-house innovations and acquisitions and now we sell around 160 products worldwide. It has taken us 28 years but today we are the largest feed additive producer in the United States. We have a

comprehensive portfolio of products that include liquid and dry methionine, chelated trace minerals, organic acids, enzymes, essential oils, pigments, feed preservatives and stabilizers, and feed hygiene and health solutions.

Specifically concerning India, in 2009, I asked Dr. Vaibhav Nagpal to develop a business plan for the country. From there we began to offer products to the poultry industry and then later expanded our footprint in dairy and aquaculture markets. As those markets have grown in the country, so has our team in India. This new office is a very clear indication of Novus's commitment to serve producers here

in every capacity that we are able.

Q2. Can you explain why your products are so tempting for India- and South Asian-specific markets?

François Fraudeau: What we are trying to do as part of our company mission is to be physically close to our customers. Our headquarters is in the United States but we have offices in over 30 countries so as to better understand our customer's challenges and more easily deliver solutions that help our customers in a sustainable way.

When I started my career in 1988, the goal of every customer was to increase production. That isn't the case any longer. Yes, optimizing



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Mr. François Fraudeau

Novus was born in 1991 and at the time we were solely producing ALIMET® feed supplement, or HMTBa, a methionine hydroxy analogue. Over the next 15 years we focused on bringing this product to animal protein producers around the world. Then, little over a decade ago, we saw an opportunity to diversify our product offerings through both in-house innovations and acquisitions and now we sell around 160 products worldwide. It has taken us 28 years but today we are the largest feed additive producer in the United States. We have a comprehensive portfolio of products that include liquid and dry methionine, chelated trace minerals, organic acids, enzymes, essential oils, pigments, feed preservatives and stabilizers, and feed hygiene and health solutions.

production is still important but now customers think about biosecurity, food safety, animal welfare, and environmental factors. And the importance of these additional concerns varies from place to place.

It's our job to bring solutions to our customers. For India, a big part of that is supplying enzymes that can boost the value of raw feed material. Enzymes enhance the value of crops produced in India. Also, we sell a lot of organic trace minerals in India because our product has been demonstrated in studies to help strengthen eggshell quality. Research has also shown that MINTREX® trace minerals can reduce the incidents of skin lesions, footpad dermatitis and wooden/woody breast, which are challenges for Indian producers due to the wet market.

Dave Dowell added: Novus also brings considerable application knowledge to our customers. Our team in India is very skilled in this area. Because each product is different, and each challenge varies from farm to farm, it's important that our technical service professionals can effectively train customers on the best application of our product. Our customers may be using our products for the first time, or they may not know how to use it in combination with other additives in the ration. We can help guide customers, answer their questions and bring in experts from our global technical services and R&D teams, as needed.

Dr. Vaibhav Nagpal added: When we came to this market, Novus teamed up with universities and colleges like Bombay Veterinary College, Namakkal and Nagpur veterinary colleges. We sponsored the studies of the students and we conducted our own studies for almost three years to really learn the value we can bring to customers in India. That investigation and planning helped us to really understand how our products could work in this part of the world. So, we greatly understand how our products work in local conditions and help to address customer pains.

Q3: Poultry is playing a major role in India and India is having vast potential as well as protein concerns. Major concerns are biosecurity and feed. To eliminate diseases, what are the plans to expand the business

and products so that India can step ahead?

François Fraudeau: We must use technology if we are going to be able to provide enough quality food, safely and inexpensively, for the growing world population. Producers must use feed additive technology to optimize immune response, bone strength and nutritional availability of feed. We simply cannot feed the world without technology.

Scott Hine added: We work with our customers to solve their problems. Whether the problems are with meat quality, biosecurity, gut health, or mortality rates of the animals, we are always looking at more effective ways to support health through nutrition.

An added benefit of being a global company so close to our customers is that we're able to see what works in one place and duplicate that success elsewhere. It gives us a different perspective, and through that new vision we can develop new products and solutions for the customer.

Q4: What are the factors for growth of Novus?

François Fraudeau: The number one factor is the growing population, the second is the growing economy. That's the story of India and it's the story globally. Poultry production is increasing 10% every year, there's a growing population here and household incomes are increasing. These factors are very important because they trigger investment.

We have the advantage of being able to predict with some accuracy the number of people on the planet next year and well beyond that. We can predict how much chicken and eggs will be eaten based on trends year over year. This information is very important and very helpful to a feed additive company like Novus. It tells us where to invest our research, which markets to invest in and which products to put in the market.

Q5: Do you have any products for antibiotic-free usage?

François Fraudeau: For us, antibiotic-free production is not new, we've been supporting it for the last 15 years in Europe. We've expanded our solutions to other countries like Thailand and Brazil that export meat to Europe where antibiotic-free is becoming the norm

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Dave Dowell

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due to stringent regulations.

Antibiotic-free is possible but there is a lot of thought and planning that must happen before a farm makes the switch. You must consider the environmental factors on the farm as well as external factors like feed quality.

Scott Hine added: For example, we provide protected organic acids (AVIMATRIX®) to help gut health, which is one part of the solution. We also provide essential oils (NEXT ENHANCE® 150), which is another part. Our technical team understands the environmental and hygiene factors and knows the mode of action of our products so they can develop a comprehensive antibiotic-free program for customers.

Dr. Vaibhav Nagpal added: Our products are just a part of the whole solution. We need to look at the biosecurity system, the farm management systems, we need to look at the feed; even the types of raw materials, the particle sizes, the pelleting temperature, how the feed mills are managed, the transportation systems. These are all the pieces that go into developing an antibiotic-free program. Sometimes customers just ask for the products and we supply them with mode of action details, but they may not work effectively if other factors have not been properly addressed.

We have expertise in Europe and now we are working to bring those Novus representatives and their knowledge to India to connect with the customers on their farms, conduct a thorough audit of their production systems and develop recommendations based on that.

Q6: Novus office was in Chennai for a long time, now with the opening of new and bigger office to better serve the need of South Asian countries as well as India, you should have some future plans, so what are they?

Dave Dowell: Our first office in India was in Bangalore then we moved to Hyderabad and then to Chennai in 2009.

With this new office, we are continuing to expand the team so that we can better serve our growing customer base. The sales, marketing, and technical service teams are adding positions and we have new products to introduce to the market in the enzyme blends

space. I am very excited about the growth we have experienced in India and the future growth potential we see. Novus will continue to invest in the region and bring new technology to our customers there.

Q7: What are the prospects of Novus products used for dairy production in India? Being dairy is an unorganized structure how we can educate the farmers related to dairy?

Dr. Vaibhav Nagpal: We definitely work with the customers to show them how our products are effective on a nutritional level. For instance, our ALIMET® and MHA® methionine products optimize animal health and milk fat yield. We have MINTREX®, which supports reproductive performance, and has been shown in studies to help reduce lameness and hoof problems. We have essential oil products that play a big role in optimizing productivity. So, we have many products but the challenge is how do we reach dairy farmers because the Indian dairy market is so fragmented? Our approach is to invest in channel partners. We have identified a few companies to collaborate with and now they are helping us identify and reach those potential customers. These partnerships are important for us to reach out to the dairy industry in India so that we can educate the farmers and nutrition through our channel partners.

Q8: Aquaculture in India is far behind when compare to other countries and production is not up to the mark. So how do your products help to increase production and add value?

François Fraudeau: The great advantage with aquaculture is that everyone can eat the product, so there is a drive to be in this industry. But it can be an expensive enterprise. For those who produce in ponds, the cost of land in India is a huge investment. Beyond that, the risk of disease is very high in an open body of water. So, we look at our products and contemplate what species-specific solutions can be offered to the producer who is just trying to keep their fish or shrimp alive.

Q9: Where do you see Novus in next ten years?

François Fraudeau: Beyond this recent expansion in India, our next expansion will be



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Dr. Vaibhav Nagpal

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in Africa. The population there is growing but they don't have many quality raw materials and the industry is still developing there in terms of processes and infrastructure.

At a global level, we will continue on our path to help feed the world but we must also accelerate the pace of innovation because the consumer is changing very quickly and regulations are also changing very quickly.

All told, the animal production industry moves very slowly where innovation is concerned. We must consider that the population is growing and that farmers are being asked to produce more high-quality animal protein on less land with less environmental impact for an end product that is still affordable. The feed additive industry can help, but we need to innovate quickly. The pace at which we will be able to address these challenges will determine our success.

Scott Hine added: For Novus to meet innovation goals, we continue to identify technology partners. For instance, we work closely with well-known genetics partners to develop nutrition solutions that will help address wooden/woody breast at the commercial customer level. We have been very successful in this, globally. We also know there are companies that we can work with synergistically to develop application solutions for customers. So, if we go back to the question of what's the unique proposition of selling Novus, the breadth of the products and the ability to apply solutions at the customer level is something that is very unique. In addition, as we learn about modes of action through research and development, we look for new technologies and partners that can provide the tools to help us help our customers and do what we do even better.

Q10: Where do you see the livestock industry in India in the next ten years?

Neeraj Kumar Srivastava: There are three factors to consider: the availability of animal protein, the demand for animal protein, the affordability of animal protein. These are critical factors. If we look at population growth, 380 million people are projected to move toward the middle-class group in India in the next 10 years. As you can imagine the protein requirement of this country in coming five to ten years is going to be enormous. The

cheapest source of protein will be chicken and eggs and India has huge potential to grow its chicken and egg production to meet the protein demand of the country. We are not looking for the export market to meet the domestic demand. I see the livestock industry in India as very attractive, very lucrative and one of the fastest growing in the world.

Q11: What are the new products in pipeline?

Scott Hine: If you look at our different product platforms, our methionine platform is consistent, and we see our opportunities in the Indian dairy industry to expand that business. We are also launching our CIBENZA® PHYTAVERSE® phytase enzyme globally and are rolling out CIBENZA® EP150, a protease combined with a probiotic that allows for a guaranteed level of spores in the product, to help support gut health. We are also looking at the opportunities in India for our antibiotic-free solutions as well as our eubiotics products.

Neeraj Kumar Srivastava added: We also just launched a proteinate organic trace mineral in the country and that was a massive success. We are looking to take that product beyond the region.

Q12: Anything Novus is doing in terms of digitalization and artificial intelligence?

Scott Hine: We believe there is a huge opportunity in "big data". We started in this area years ago with our C.O.W.S.® ruminant performance assessment program. In the end, however, it really comes down to analysis and comparative analysis, which is our area of expertise in terms of R&D and application of that knowledge. Working closely with our customers is extremely important to us as we help provide unique solutions to their unique problems. What we are doing with the C.O.W.S.® program is monitoring and recording their behavior then taking that data and analyzing it. Then we work with professional dairy nutritionists and people who have good experience with cattle to identify what could be done differently to increase that cow's comfort and ultimately its productivity. This is not a new program and we have seen that when a producer uses the recommendations that come out of the analysis, they see a significant lift in production.

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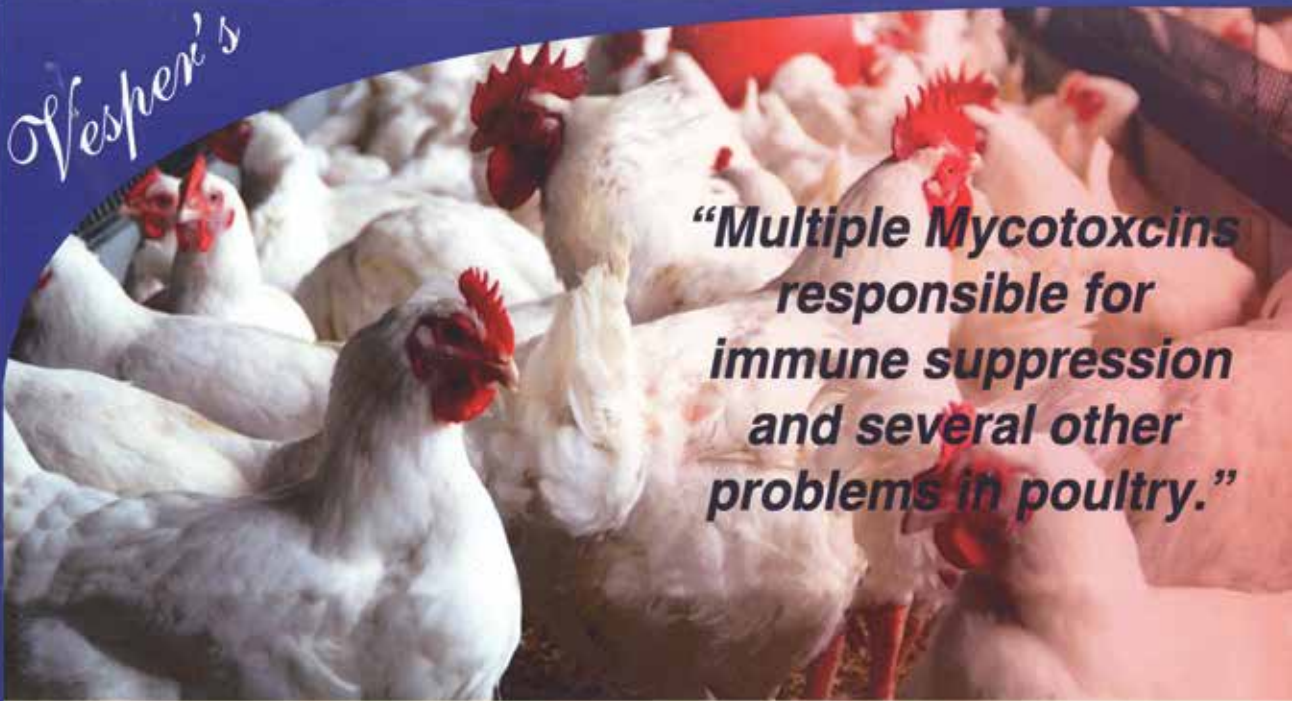
Vietnam is one of the best investment destinations in Asia and is the main producer of livestock and aquaculture. Vietnam not only meets domestic consumption, but also exports to many countries. The Ministry of Agriculture and Rural Development of Vietnam reported that the livestock and related sectors' exports were worth US\$855.4 million and are expected to reach \$1.2 billion in the next year. According to the Directorate of Fisheries, total seafood production in

September 2019 reached 733.5 thousand MT, of which capture output hit 251 thousand MT, and the aquaculture volume touched 328.5 thousand MT. This means that Vietnam is the destination that international stakeholders are interested in to expand their markets throughout Asia, and that's why VNU Exhibitions Asia Pacific, without strong partner, MINH VI EXHIBITION & ADVERTISEMENT SERVICES CO., LTD (VEAS), will organize "ILDEX Vietnam 2020" to provide an international business platform for the Livestock and

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- Improves weight gain and FCR



Mycostat

Antifungal, Antitoxin & Performance Protector
Takes care of fungal growth and toxin formation.

- To Reduce gut pH, pathogens and toxins.
- To increase intestinal activity and stimulate immune system.
- To get best results from the **Vaccination programs** being followed.
- To increase disease resistance and enhance performance.



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Bangalore - 560 097
Email : info@vespergroupvet.com
Website: www.vespergroupvet.com

Customer care No: 08023254333

An ISO 9001-2008 Certified Company

VISION *The Care Takers*
Catalysis Research
Creates Products
Cares Customers

Dairy, Meat Processing and Aquaculture Exposition, Vietnam (ILDEX Vietnam), is structured to be an international trade exhibition covering many profiles including pig, poultry, dairy, egg and meat processing. Top domestic and international companies will be presenting their products to top buyers and industry people in Vietnam. For over 16 years, we have promoted the Vietnamese market as a destination for international investors. ILDEX 2018 attracted 1,924 international participants from 40 countries during the 3 days of the exhibition with more than 100 successful meeting requests. ILDEX Vietnam 2020 will be held March 18-20, 2020 at Saigon Exhibition and Convention Center, Ho Chi Minh City, Vietnam.

EXHIBITION HIGHLIGHTS

ILDEX Vietnam is a biennial International Exhibition focusing on Livestock, Dairy, Meat processing and Aquaculture. The event has proven to be a great opportunity for local and international firms to not only introduce new products, but also get updates on contemporary market trends, see new technology, and acquire new knowledge at the event's extensive seminar programs presented by renowned key speakers. This exhibition builds a marketplace for both local and international industry players and professionals to expand their business through a wide range of highlight activities including International Pavilions, the B2B Matchmaking Program, the Hosted Buyer Program and many more.

Mr. Kevin Zhao, Project Manager of ILDEX Vietnam said that "At ILDEX Vietnam 2020, over 75% of the total exhibitors are international brands, especially from the "Farm Production" segment. We have more than 60 of the world's leading manufacturers to showcase their equipment, which is a distinct advantage of ILDEX Vietnam. Moreover, at this edition, we are pleased to welcome lots of new companies who will be exhibiting in Vietnam for the first time and are ready to share their latest products and innovations with the Vietnamese buyers, such as HUALI, TEXHA, BRODRENE HARTMANN, ROTECNA, INBERG etc. We will host 250 leading companies from 30 countries plus 7 international pavilions from the Netherlands, France, the United States of America, China, the United Kingdom, Italy and the Czech Republic. The exhibition hall will be divided into zones representing four main industrial sectors, Animal Health, Feed Ingredients/Additives, Farm Production and Meat Processing/Handling. A diverse mix of displays and categories will bring leading stakeholders, manufacturers, importers & exporters and professionals under one roof."

CONFERENCE HIGHLIGHTS - 'FEEDINFO'

We [ILDEX] are delighted to announce an exclusive cooperation with Feed info, who will be hosting brand new Formulation Briefings at ILDEX Vietnam 2020

Feed info's Formulation Briefings have been created specifically for Asian formulation professionals and nutritionists from feed mills

and integrated farms, and will focus on African Swine Fever, alternatives to antibiotics and cost-effective formulation.

Simon Duke, Editor-in-Chief of Feed info News Service explained: "Feedback by our readers on the Vietnamese market is extremely positive. We know this is a fast-expanding, exciting market and we think the opportunities for companies operating in the region are vast.

With thousands of animal nutrition and feed professionals attending ILDEX Vietnam, we felt the perfect way to begin our partnership with VIV was to create an event for these attendees addressing the biggest challenges they face. This new alliance allows ILDEX Vietnam's industry audience to gain the value of being at one of the region's largest exhibitions, combined with the high-level live content Feed info is known for."

The briefings will take place on Thursday 19 March and are free for ILDEX Vietnam 2020 attendees. For more information visit www.ildex.feedinfo.com For roundtable, speaking and sponsorship opportunities, contact Ben Cronin at ben.cronin@agribriefing.com

Apart from the global conference partner, ILDEX will offer lots of knowledge conferences for all delegates which are organized by many associations such as Vietnam Ruminant Husbandry Association, Ministry of Agricultural and Rural Development (MARD), Federation of Asian Veterinary Associations: FAVA and more.






VICTAM AND ANIMAL HEALTH AND NUTRITION *Asia* 2020

THE TOTAL ANIMAL FEED AND HEALTH EVENT

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visitors

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- Trends** All the latest in the feed and animal health industries
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VICTAM AND ANIMAL HEALTH AND NUTRITION ASIA 2020

OFFICIAL SHOW WEBSITES: VICTAMASIA.COM & VIVHEALTHANDNUTRITION.NL

BIOMIN MAKES STRONG IMPACT AT POULTRY INDIA EXPO

By bringing in its experts at the booth to provide services and solutions to the customers, Biomin made a strong impact at the 13th edition of Poultry India Expo held at Hyderabad.

■ Hyderabad

From productive discussions with BIOMIN experts to an engaging fun activity, Biomin booth at Poultry India expo was bustling with lot of activities this year. The three-day international expo held at Hitex Exhibition Complex in Hyderabad from November 27 to 29, 2019 provided an ideal platform for the innovative animal nutrition company to meet customers and potential customers from south Asia.

The presence of BIOMIN experts: Poultry Technical Manager Andrew Robertson, Regional Product Manager - Animal Nutrition Lesley Nernberg, and Technical Sales Manager - Poultry Gangga Widyandugraha added value to the customers and visitors.

Display of models depicting the Duplex Capsule structure of Digestarom® DC and



molecular structure of mycotoxins at the booth facilitated the visitors in getting a better understanding of the BIOMIN products and its mode of action.

“Poultry India 2019 is one of the best events for Biomin in India and we are glad we were able to make a vibrant presence here with lot of customer engaging activities,” Asia-

Pacific Regional Director Edward Manchester said and added that Biomin is focusing on helping the industry to optimize feed performance.

During the expo, customers got an overview of Spectrum Top® 50, the mycotoxin detection service from BIOMIN and the mode of action of Mycofix® portfolio of feed additives.

Andrew Robertson in his comments observed that huge

opportunities are ahead for Biomin in Indian subcontinent. “It is very encouraging to interact with the customers and visitors here, who are showing a great level of interest in improving feed efficiency and animal performance through phytogetic feed additives,” he said.

The golf activity hosted at the booth by Biomin was thoroughly engaging and entertaining for the customers and became an immediate hit.

“We are delighted to see the happy customers trying their hand at the putting greens and those who put won a prize,” Rajan Seralathan, Strategic Process & Marketing Director, Biomin India said and added that there were also repeat visitors who wanted to try again.

To create awareness on the Biomin products and services, the entire Biomin team observed ‘Poultry Star Day’ and ‘Mycofix Day’ on November 27 and 28 respectively by wearing the badges.

Alongside Indian customers, industry stakeholders and business partners from Sri Lanka, Nepal, Bhutan, and Bangladesh also visited the Biomin booth.



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First time
in India



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Chlortetracycline 20% Soluble Powder

Sky CTC[®] 20% Soluble Powder
Containing : 1 Kg contains Chlortetracyclin HCl 200g.



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Customer care No. : +91 9892729888, Email : Customercare@riethhealthcare.com, website : www.rieth.in

EW NUTRITION LAUNCHES TOP-PERFORMING BACTERIAL XYLANASE ENZYME AT INDIAN CUSTOMER-CENTRIC EVENT



■ Delhi

In December 2019, EW Nutrition has officially launched Axxess XY, a novel, intrinsically thermostable xylanase enzyme that delivers top performance to feed producers and the livestock industry. The revolutionary product was launched at a customer-centric circuit event across five locations in India.

In its effort to improve animal gut health, control toxin risk, and reduce antibiotic use, EW Nutrition has long supported the Indian livestock industry with its holistic, science-backed solutions. The company is now entering a highly competitive market with a revolutionary solution: Axxess XY. This enzyme comes with the highest level of intrinsic thermostability and is active against both soluble and insoluble arabinoxylans. The top benefit of Axxess XY is an unparalleled flexibility in feed formulation, resulting in significant feed cost savings.

The mechanisms and derived profits of the new product were discussed during a five-city customer-centric event titled "GURU SPEAKS", part of EW Nutrition's "Partners in Progress" series. The key speaker was Dr. Craig Nelson Coon, Head of the Department of Poultry Sciences at the University of Arkansas, USA. Dr. Coon has over 50 years' experience in research and teaching in poultry science.

Dr. Shirish Nigam, Managing Director of EW Nutrition South Asia, and Dr. Ajay Awati, Global Category Manager, Enzymes, highlighted Axxess XY's unique value proposition and shared various trials conducted to prove the competitive advantage over other enzymes available in the market.

Dr. S. Mahendran, Regional Technical Manager, South Asia threw light on feed formulation optimization and explained how the addition of Axxess XY can help release additional energy from feed, which results in optimum performance

Is your protection adequate?

Ordinary toxin binders



 Defusion™



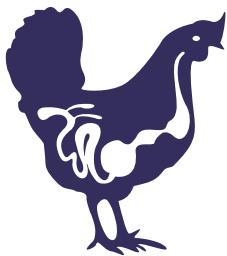
Trust....

 Defusion™

Defuses multiple mycotoxins, defends gut integrity

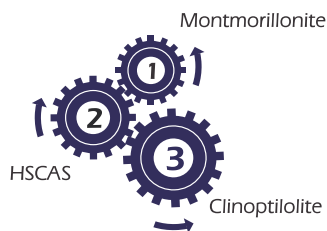
Defusion is a product from globally acclaimed Notox product range. It contains synergistic blend of toxin binding ingredients that are being selected based on series of *in-vivo* and *in-vitro* studies. It has proven efficacy to reduce mycotoxin absorption and increase animal welfare and performance even in most challenging conditions

Glucomannan complex >30% of total composition



Effectively binds tough toxins like ZEA, DON, maintains gut integrity and promotes immunity

Synergistic Blend of bipolar clays



Scientifically assessed blend of 3 different types of clays based on series of *in-vitro* studies that ensures maximum efficacy against multiple mycotoxins

Purified, organic carbon derived from Brazilian babassu coconut shell



Free from contaminants and therefore safe to use in animal feed and binds effectively even chemical toxins without altering the nutrient level

 PROMOTE™
Ranae

 provimi®



and production.

The unparalleled thermo-stability of Axxess XY became a talking point among the audience and various integrators showed their interest in using the new enzyme in their formulations. Also, EW Nutrition's efforts to bring everyone together on a knowledge-sharing platform was highly applauded by the attendees. Industry partners also iterated the need for more detailed sessions in future.

The "GURU SPEAKS" series was a great opportunity to reach to a wider array of breeders and broiler integrators across India. The event was kickstarted on 16th December, 2019 at Karnal, followed by Coimbatore, Hyderabad, Pune and Bangalore. Prof. Coon shared relevant and practical solutions to the common challenges faced by broilers and broiler breeders. He also shared his insights on nutrition and management of modern broiler breeders, and highlighted that maintaining the protein balance is nowadays gaining more importance than energy requirements for better production and performance of birds. He deliberated on pros and cons of current feeding practices and management, including biosecurity and lighting schedules for

birds.

Major key stakeholders – technical consultants, university professors, farm managers, integrators etc. – attended the series and benefitted from the information provided during the event.

"We are pleased to bring our revolutionary enzyme solution to our Indian partners, thus enriching our portfolio of products and services to the benefit of the local livestock industry," says Michael Gerrits, Managing Director, EW Nutrition. "We are confident that Axxess XY will be a breakthrough for our customers, and we look forward to providing and servicing our comprehensive animal nutrition solutions in India, a most valuable and respected market."



ANNOUNCING



National Conference and Seminar by WVPA(India) Advances in Poultry Science for One Health

Venue: ICAR-NIANP, Bangalore

Date: 28th Feb, 2020

Speakers- International & eminent experts from India

World Veterinary Poultry Association (India)

The World Veterinary Poultry Association is a global professional association for poultry veterinarians and other avian health professionals.

The Objectives of the Association are:

- To organise meetings for studying diseases and conditions relating to the avian species
- To encourage research in this field
- To promote the exchange of information and material for study between individuals and organisations in the avian species
- To establish and maintain liaison with other bodies with related interests

Registration Details:	Online Registration	On-site Registration
	16 th Jan to 28 th Feb, 2020	28 th Feb, 2020
Students	₹ 800	₹ 1000
WVPA Members	₹ 1200	₹ 1500
Non Members	₹ 2000	₹ 2500

For more details, please login to www.wvpa.in
www.wvpaindiaconference.com

Participants:

- Students related to Poultry Research and Management
- WVPA Members
- Poultry Professionals and related to the poultry industry

Posters:

- Numbers of Posters to be accepted: 100
- Travel grant for Students: [if abstract is accepted], by sleeper class Railway Ticket + Registration and Accommodation
- Awards and Recognition for top 20 abstracts based on quality of research
- Last date for submission of Abstract: **15 February 2020**

Annual Membership Fee: ₹ 2500/-

Life Membership [on invitations based on contribution and involvement]



GRAND PARTICIPATION OF INDIAN HERBS IN POULTRY INDIA

Indian Herbs is the originator of the concept of veterinary Ayurveda. Indian Herbs was the first company to harness the rich treasure of herbs, by developing phyto-genic products on modern scientific lines. It offers unique phyto-genic alternatives for synthetic products with better efficacy at lower cost, which are free from side effects and residual toxicity. The company is catering to wide range of animal species including poultry, ruminants, equine, swine, pets, aquatic and other animal species for more than six decades. The focus of Indian Herbs is on Food Safety through Feed Safety. The products of Indian Herbs are useful to produce antibiotic and residue free chicken and eggs.

2019 HELD IN HYDERABAD

■ Hyderabad

Indian Herbs, the pioneer and market leader and number one company in Herbal Animal Health Care Products Industry since 1951, participated in Poultry India 2019, held at Hitex Exhibition Complex, Hyderabad from 27th to 29th November, 2019 with its strong technical and marketing team. The sales and marketing team gave a warm welcome to all the visiting customers and consultants at Indian Herbs stall.

Indian Herbs is the originator of the concept of veterinary Ayurveda. Indian Herbs was the first company to harness the rich treasure of herbs, by developing phyto-genic products on modern scientific lines. It offers unique phyto-genic alternatives for synthetic products with better efficacy at lower cost, which are free from side effects and residual toxicity. The company is catering to wide range of animal species including poultry, ruminants, equine, swine, pets, aquatic and other animal species for more than six decades. The focus of Indian Herbs is on Food Safety through Feed Safety. The products of Indian Herbs are useful to produce antibiotic and residue free chicken and eggs.

Realizing the emerging needs of the industry, Indian Herbs has developed unique formulation for use in poultry industry as natural alternative of synthetic products. Indian Herbs is the first company to introduce research oriented unique herbal concepts in important segments such as, Choline (BioCholine), Vitamin C (Herbal C), Natural Vitamin C with Chromium (HeatBeat), Vitamin E (E-Sel Power), AGP (Herbiotic FS), Respiratory Antiseptic

Nutricharge your Chicks with

Vannamin[®] Liquid

Concentrated with 77 Organic Minerals



Vannamin during vaccination Reduces stress :

- ⇒ Lowers Cortisol
- ⇒ Boosts Immunity IgG
- ⇒ Nourishes DNA
- ⇒ Provides instant energy 10,450 KJ/Ltr.



Guybro Animal Health Pvt. Ltd.

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Veera Desai Road, Andheri (W), Mumbai - 400053
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W : www.guybro.com / www.toxinbinder.com

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(Animunin), Immune Potentiator (ImmuPlus), Metabolic Stimulant and Liver Tonic (LivoLiv-DS & LivoLiv 250), Coccidiosis (ZeeCox), Methionine (HerboMethione Plus), Lysine (HerboLysin), Natural Calcium (MagaCal), Male Vitality and Breeding Efficiency Optimizer (ProLibid), Anti-stress & Adaptogen (StressCheck), Renal Tonic (NephTone) etc. These products are being used successfully by leading institutional customers in India as well as abroad with excellent results. The products are not only most economical and ecofriendly but also improve the quality of feed, productivity and profitability.

These products are being used by the leading institutions in India and abroad with excellent results. The products are successfully being exported to more than 50 countries across four continents including Asia, Europe, Latin America

and Africa. Indian Herbs has also received the certificate from Export Inspection Council of India, Ministry of Commerce and Industry, Govt. of India and was the first Herbal Company to get this recognition.

The R&D Centre of Indian Herbs, which is approved by the Ministry of Science & Technology, Govt. of India since 1986, is well equipped with the best available state of the art modern facilities for standardization and quality control of herbal products.

There is a continuous process of scientific evaluation on herbal products of Indian Herbs, in comparison to synthetic products in India and abroad, to ensure best quality and efficacy of the products. More than 200 scientists have been awarded Masters and Doctorate degrees, for their research work which has resulted in publication of more than 1000

research papers in the prominent national and international scientific journals. Indian Herbs has the distinction of getting more than 22 Patents in USA, Europe, India etc. and many patents are pending in USA and other countries, for innovative research on herbs and herbal products.

The stall of Indian Herbs attracted a large number of visitors, including feed millers, integrators, large farmers, consultants, nutritionist and distributors etc. All the queries of the visitors were answered by the technical team of Indian Herbs to their best satisfaction.

Indian Herbs is committed to foster the well-being of animals through nature's bliss and caters to antibiotic free, residue and resistance free, environment friendly, cost effective phyto-genic solutions for animal healthcare.

Poultrac Tag-a-Shed

App for Smart Management
of Poultry Data

Instant Critical Reporting

100% Genuine Data Recording

Zero System Cost

Indispensable to Smallest or
Biggest Operation



**New Generation Technology
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Development Partner





KEMIN'S NEW YEAR RESOLUTION TOWARDS EXCELLENCE THROUGH 5S IN 2020

■ Chennai

In our continuous efforts to make the corporate office more efficient and vibrant, Kemin launched 5S process at our Ambattur (India) office. The launch event was facilitated along with our knowledge partner, TVS Training and Services Ltd. on 23rd December 2019. We believe following the principles of 5S allow us to evaluate our current workspace and supplies, identify waste, and ultimately create an environment where employees can do their work

efficiently, sustainably and have the supplies they need in an easily accessible place.

What is 5S?

The 5S system is a lean manufacturing tool that improves workplace efficiency and eliminates waste. There are five steps in the system, each starting with the letter S:

- Sort
- Set in Order
- Shine

- Standardize
- Sustain

By providing a systematic framework for organization and cleanliness, 5S helps facilities to avoid productivity loss from delayed work or unplanned downtime. 5S defines the steps that are used to make all work spaces efficient and productive, help people share work stations, reduce time looking for needed tools and improve the work environment.

By utilizing 5S we can improve efficiency

Good Gut Balance.

Changes in feed, pathogenic challenges, environmental stressors – maintaining litter and foot-pad quality while decreasing medication usage is a constant challenge in poultry production.

The probiotic feed supplement GutCare® PY1 supports gut balance, sustainably enhancing the overall condition of your flock – and your profitability.

animal-nutrition@evonik.com

www.evonik.com/animal-nutrition

GutCare®



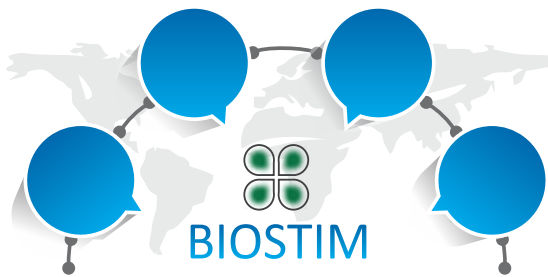


by eliminating the waste of motion looking for tools, materials or information along with an improved safety and morale due to improvements in the work environment.

It is not just a way to tidy up the workplace but a powerful system to organize, visualize, maintain and improve the workplace with an increase in safety, quality and productivity as immediate benefits and helps to create continuous improvement. Through this we aim at raising our standards of workplace practices - change for better, enabling personal and professional excellence.

This is our new year resolution and what's yours? Happy New Year, everyone!





GUT HEALTH PROMOTER

Biostim is a carefully chosen blend of essential oils with Oreganum Vulgare L. as key component



Complementary feed for Breeding, Rearing and Laying Hens

RED MITES CONTROLLER



RESPIRATORY SOLUTIONS

Excellent support during respiratory and breathing problems, Reduction of heat stress

A Product of:



Ceresstraat 13, 4811CA, Breda, Netherlands.
Email: info@bioceutisch.nl, Web: www.bioceutisch.com

Marketed in India by :
RAVIOZA Biotech
www.raviozabiotech.com

MEYN CHANGES GEAR TO MEET NEW CHALLENGES IN POULTRY PROCESSING INDUSTRY

■ Greater Noida, Delhi

Meyn Food Processing Technology is a leading global supplier of poultry processing solutions and it develops products and services for the efficient and effective transformation of live birds to consumer products. The range of products and services offered by Meyn is characterized by its renowned high quality, which is based on reliability, productivity, durability and ease of use. Meyn's headquarter is based in Oostzaan (outskirts of Amsterdam), the Netherlands.

Meyn is active in the Indian market from more than 30 years now and having already established a decisive leadership in the poultry processing industry in India. Now the company is gearing up for the upcoming challenges. Because of increased business volume and expansion plans in India and South Asia region, Meyn opened their new fully owned subsidiary office under the registered name of "Meyn India Pvt Ltd" in the year 2018.

To further consolidate the market and on completing a full year Meyn India has now decided to commence spare parts sales and service from its own office based in Greater



Noida, Delhi NCR from the first quarter of 2020. This will surely help our customers in terms of shorten lead time and our customer will be happy to pay their invoice in local currency.

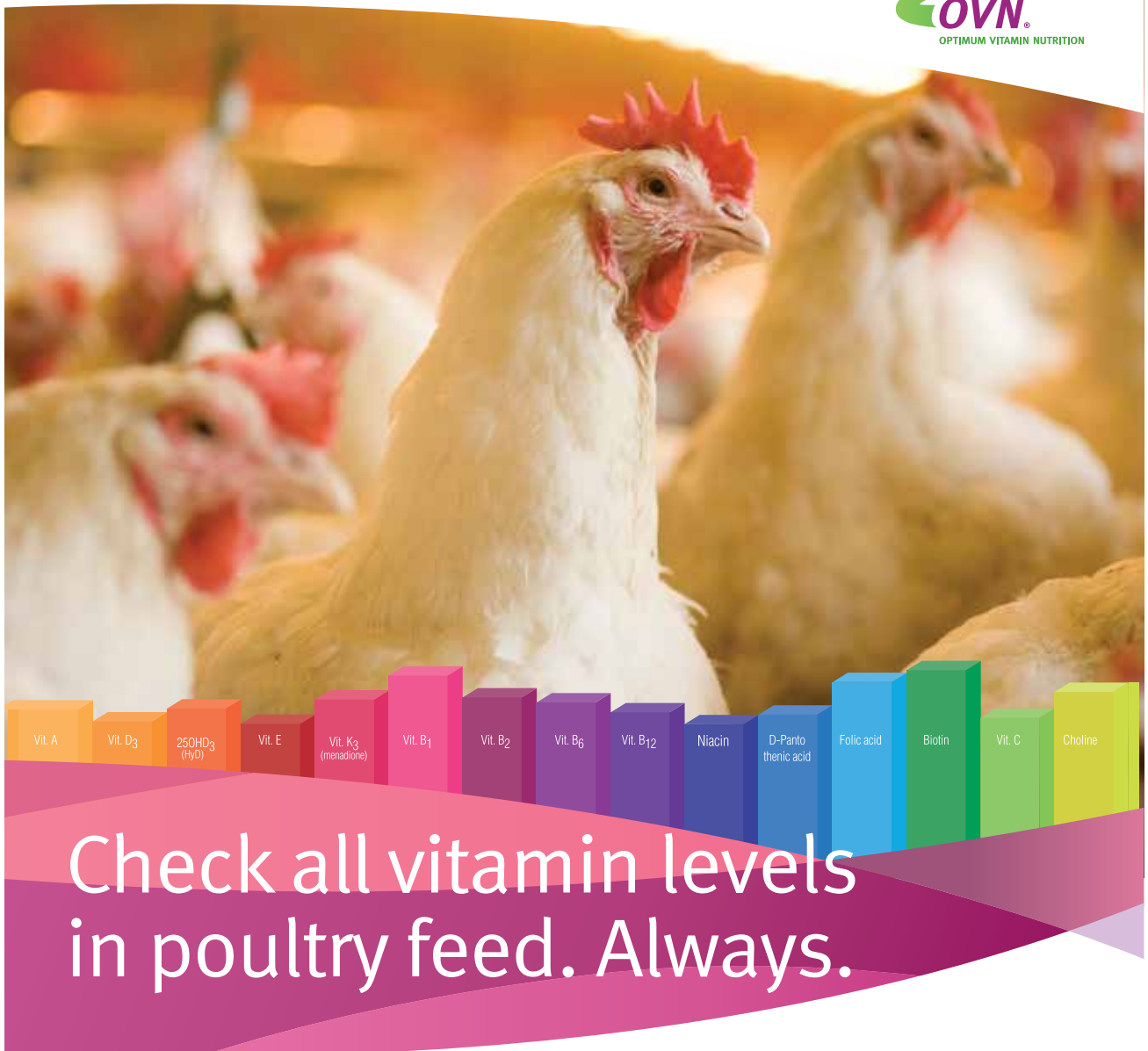
"It is a great feeling to complete a full year

of establishing our new office in Greater Noida. We are ready to enhance our footprint in India and South Asia Market by providing end to end solution in poultry processing from Meyn India office" said Mukanjay Singh, Director Meyn India Pvt Ltd.

'Meyn has full confidence that the Indian poultry processing industry will further professionalize which is a huge opportunity for Meyn and we are ready' -Mr. Robbert Birkhoff, Sales Director Meyn Food Processing Technology B.V.

'Meyn India employs a strong multi-skilled team who are continuously striving hard, to service our customers at the best' -Mr. Olivier Roelfs, Regional Director Meyn Food Processing Technology B.V. 'It is very satisfying that the market is developing and moving from whole bird to value added products which represents an enormous opportunity for Meyn' -Mr. Karel De Waal, Area Sales Manager Meyn Food Processing Technology B.V.





Check all vitamin levels in poultry feed. Always.

Optimum Vitamin Nutrition (OVN™) is about feeding animals high-quality vitamins in the amounts and ratios appropriate to their life stage and growing conditions. All ingredients in animal feed are regularly evaluated. Vitamin levels and ratios require just the same degree of attention. We therefore encourage you to check the vitamin levels in poultry feed. Always.

The new DSM Vitamin Supplementation Guidelines 2016 are the industry's key reference tool for cost-effective optimization of your vitamin nutrition strategy.

Please visit www.dsm.com/ovn to download the tool and contact your local DSM expert for more information.

DSM Nutritional Products India Pvt Ltd
 Plot number E -57 & E-58, Additional MIDC, Anand Nagar,
 Ambarnath (East), Thane - 421501 India,
 Telephone : +91 251 6484018-19 , +91 9967652087
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Srinivasa



Hy-Line

BIOSECURITY ON COMMERCIAL LAYER FARMS

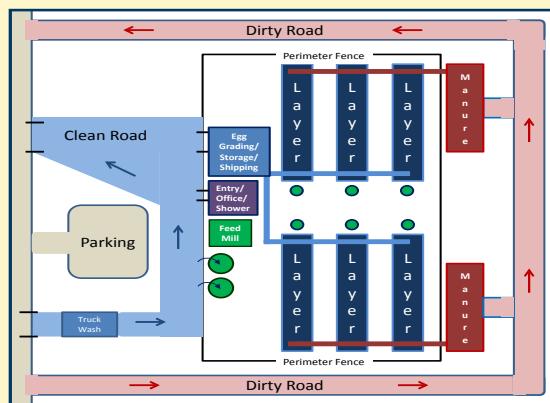
Conceptual Location, Isolation

Poultry farm should be planned in isolated location away from existing poultry farms. Poultry sheds should be back from the road.



Growing and laying facilities should be segregated to avoid spreading of diseases.

Clean Road and **Dirty Road** should be established. **Clean Road** for eggs, feed and materials; **Dirty Road** for manure, cull birds and trash.



Cultural

Training, Education and Meetings

Educate workers and external crews on the importance of biosecurity. Have a **biosecurity plan** with written procedures for employees to follow.

Train (and periodically retrain) employees on biosecurity procedures.



Structural

Layout, Fences, Gates, Footbaths



Farm should have an **entry gate** which is locked and supervised.

Limit human and vehicle traffic onto the farm.



A **perimeter fence** should surround the poultry sheds to avoid unwanted entry of people and animals.



Vehicle washing station for all vehicles entering the farm.



Use dedicated farm vehicles to deliver feed.

Eggs, feed and materials should be delivered at the farm perimeter fence.



Bird exclusion fencing at bottom of the sheds.



poultrybiosecurity.org



hyline.com

Operational

Daily Routine Procedures



Sign boards and proper traffic flow – to avoid unwanted entry.



Limit visitor entry onto farm, use office meetings whenever possible. Avoid using external crews for vaccination/beak trimming/moving birds.

Biosecure entry point. Entry equipped with human spray, hand wash, farm dedicated footwear and foot bath. Vigilant receiving external crews and their equipment.



Use footbaths with clean disinfectant at each entry of the poultry house.

Limit number of workers inside the sheds for feeding and egg collection.



No outside vehicles allowed inside farm gate.

During depletion, take old hens outside farm gate for pick up.



Water. Use good quality water. Test water source twice annually. Water treatment as necessary.

Dead bird disposal should be by incineration, burial or composting.

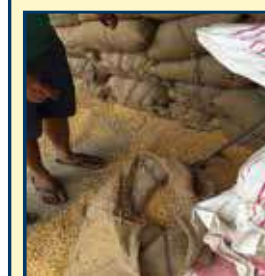
Risk Factors



Rodents can carry and transmit disease to poultry. Provide an effective rodent control program.



Wild birds are carriers of Raniket and avian influenza. Use bird-proof fencing on bird sheds.



Feed. Use good quality tested feed ingredients. Do not re-use feed bags or use bulk feed. Avoid animal source proteins. Routinely clean feed mill and mixer.



Manure is a source of infection. Keep manure dry to control flies. Replace leaking nipples and sprayers to keep manure dry. Do not spread manure near poultry farm. Drying and composting manure reduces contamination.



Egg trays. Trays returned from outside the farm are dangerous sources of infection. Effective disinfection of egg trays is required. Best practice is paper egg trays that do not return to the farm.



Equipment. Use farm-dedicated vehicles for moving eggs, feed and materials inside the farm. Maintain own beak trimming and vaccination equipment.



14th Poultry

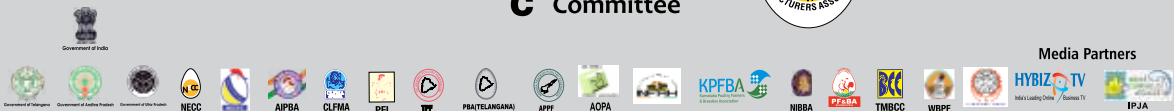
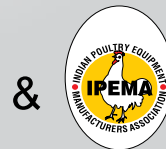


ASIA'S LARGEST INTERNATIONAL POULTRY EXHIBITION

FOR YOUR OVERWHELMING RESPONSE
& EXPECTING THE SAME FOR

25 **26** **27** **Nov. 2020**

Organised by: **E** Executive
A Advisory
C Committee



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Email: info@poultryindia.co.in URL: www.poultryindia.co.in

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Egg Production Enhanced !



Bergazym

Thermostable, pH Stable,
Granulated & Coated enzyme



Bergaapur

Natural Emulsifier with
High Nutritional Values



Bergafat DLN2

Consistent Quality, Fatty Acid
Profile Resembles Chicken Fat



BERGA FAT

T-300

Pure Vegetable 100%
Rumen Bypass Fat



FAT-O-LIP (LS)

Rumen Bypass PC for Everyday Need



HiEnMix

Premium Micro-nutrient Premix
Premium all in one animal feed supplement



Berg+Schmidt
Functional Lipids

Berg & Schmidt (India Pvt. Ltd.)

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FATTY LIVER HEMORRHAGIC SYNDROME (FLHS)

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Etiology ● Excessive energy diet ● Lack of exercise ● Hereditary ● Excessive estrogen

Introduction: Fatty liver hemorrhagic syndrome (FLHS) is a metabolic disorder of layer birds. This condition occurs worldwide and affects all the species of birds. It is characterized by sudden death of birds, heavy fat deposition around the liver along with haemorrhages. Hepatomegaly is most in important features and prone to bleeding lead to death of birds. Fatty liver hemorrhagic syndrome is “the major cause of mortality in laying hens. This condition occurs due to high energy diet and low protein and lack of exercise. It occurs most often in warm, summer months.

Clinical Findings

Affected birds shows overweight, pale comb, lethargic, laying of egg is slow, excessive fat deposition around the abdomen. Most of the case bird found dead. In blood serum analysis affected bird increased blood levels of estrogen, osteocalcin, and leptin-like protein.

Necropsy lesions

Necropsy reveals that hepatomegaly, liver pale and engorged with fat. Abdomen shows varying degree of blood clots. The damaged liver also lost structural integrity lead to prone for rupture and hemorrhage. The abdominal cavity also having huge amount of unsaturated fat. The ovary become active, at least in the early stages of FLHS, and the metabolic and physical stress associated with oviposition may be factors that induce the final, fatal hemorrhage. Affected birds often have pale combs, either due to reduced egg production or blood loss.

Histopathology

Microscopic examination of liver tissue shows liver cells (hepatocytes) that are grossly distended with fat. There may be hemorrhages present. Fat within the hepatocytes are seen as

clear spaces (vacuoles) within the cytoplasm of the hepatocytes. The accumulation of fat within the liver weakens the integrity of blood vessels, leading to hemorrhage .

Diagnosis:

Sign

Fatty liver hemorrhagic syndrome is easy to recognize at necropsy because of the liver hemorrhage and because the liver is enlarged and engorged with fat. This makes the liver friable, and it is difficult to remove each lobe in one piece. The pale yellow color of the liver, although characteristic, is not always specific to FLHS. Normal layers fed appreciable quantities of yellow corn or high levels of xanthophyll pigments will also have a yellow-colored liver but without associated hemorrhages. A number of specific diet ingredients can induce liver hemorrhage but without concomitant accumulation of excess fat. Likewise, feeding rancid fat can cause liver hemorrhage, again without fat accumulation. In birds with FLHS, the liver dry matter is characteristically at least 40% fat.

The degree of FLHS can be described as a poultry liver hemorrhage score, which is usually

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based on a scale of 1–5:

- 1 = no hemorrhage
- 2 = 1–5 hemorrhages
- 3 = 6–15 hemorrhages
- 4 = 16–25 hemorrhages
- 5 = >25 hemorrhages, as well as a massive, usually fatal, hemorrhage

Fatty liver disorder also impairs calcium metabolism in the bird, thus affecting skeletal integrity and eggshell quality.

Treatment Options

- Supplementing feed with 6 % oat hulls
- High protein feed (up to 20% protein).
- Adding Choline chloride, Vitamin E, Vitamin B12 and Inositol to their feed.
- Feeding biotin rich foods for proper fat metabolism
- fish meal
- alfalfa meal
- Increase exercise and free ranging
- Limit fatty foods
- The use of L-Tryptophan in the diet can decrease the syndrome

Prevention and control

- To reduce diet density to avoid birds gaining excess weight. Limit energy intake through the use of a lower energy diet and/or changing feed management.
- Replacing dietary carbohydrates with supplemental fat has been shown to reduce the incidence of FLHS as long as the energy level of the diet is not increased
- Supplemental fat depresses synthesis of new fatty acids, so the liver has to produce less fat for the yolk. This reduces the metabolic burden on the liver.
- Use of crumbled or pelleted feed results in greater feed and energy intake than mash feed. Avoid crumb and pellets in flocks susceptible to FLHS.
- Layer diets should contain adequate levels of Vitamin E (50-100/kg) and selenium (0.3ppm) to ensure adequate levels of antioxidants to prevent tissue rancidity.
- Supplementation with lipotropic agents such as choline (500mg/ kg), methionine (0.1%), and Vitamin B12 help to mobilize fat from the liver, and support recovery in affected hens.

- Calcium deficiency has been associated with FLHS. This can be addressed with the addition of large-particle calcium and Vitamin D to the ration.
- This allows the bird to eat more calcium without over-consuming the energy component of the feed.
- Avoid any form of stress. Heat stress is a particular concern as it can precipitate or accentuate the occurrence of FLHS.
- Feed intake should be monitored, along with increases in body weights and mortality, and decreases in egg production.
- Routine (at least every 30 days) body weight and uniformity checks can help reveal development of excess body weight.
- Less uniform flocks are more likely to contain relatively heavier birds with a greater risk of FLHS. Perform post-mortem examinations of mortality to assess the condition of the liver, and be alert to excess abdominal fat.
- Methionine, choline, inositol, Vitamin B12, biotin, L-tryptophan, carnitine, and selenium are essential for proper liver function and fat metabolism.

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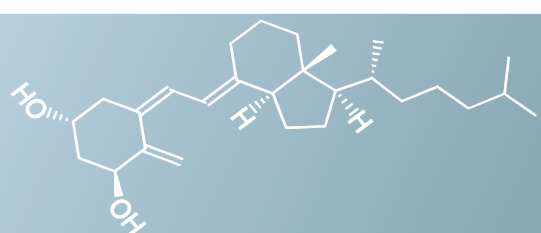
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BEAK TRIMMING: A MANAGEMENT TOOL

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Introduction

Beak trimming (debeaking) is a routine management practice performed in the poultry industry including laying hens, broiler breeders, turkeys, and ducks. Beak trimming is the removal of approximately one quarter to one third of the upper beak, or both upper and lower beak of a bird (Gentle et al., 1995). The beak of a laying hen is well innervated and contains nociceptors (sensation of pain), thermo-receptors (sensation of temperature), and mechanoreceptors (sensation of pressure and texture) (Gentle et al., 1989). Beak trimming therefore results in pain and sensory loss (Gentle, 2011). Beak is a sensitive tool generally used for grasping of food, preening, nest building, exploring objects in the environment, dust bathing and social interaction. Beak trimming is generally performed with the purpose of reducing cannibalism and delaying the sexual maturity for optimum egg production. Beak trimming causes reduction in feed intake, body weight gain, mortality, and affects some production parameters, such as feed conversion efficiency, the net effect of which is usually positive on profitability. The relative effect of beak trimming on bird well-being is influenced by multiple factors, including the proportion of beak tissue removed (Cheng, 2005). Beak trimming reduces feed intake, BW, mortality, and affects some production parameters, such as feed conversion efficiency, the net effect of which is usually positive on profitability.

Historical development of Beak trimming

History started when paring of the tip of the top beak and beak burning was done by Kennard, 1920 then gas torch by T. E. Wolfe in the San Diego county in California followed by W.K. Hopper used tinner's soldering iron in Ohio Experiment Station in the 1930s. Thereafter Lyon Electric Company took some modification in it and developed the very first - "debeaker" in 1942, followed by Sundaresen and Jayaprasad, 1979 in India.

Methods of Beak Trimming

1. Hot Blade Method- Heated blade which is often mechanized is used for trimming. Claimed as most accurate method. Dark (dull) red heat temperature of 650-750°C, 'guillotine'-type, blade that both cuts and cauterizes the beak tissue when birds are 5 to 10 days old.

2. Bio/Electric beak-trimming -Main target of this method is burn a hole in the upper beak at a point just beyond the horny projection so that tip of beak will die. Bio beaker used a high voltage arc (1500 Volt AC electric current) across two electrodes to burn a small hole in the upper beak of chickens in 0.25 second with capacity of 2000/hr.

3. Mechanical method- A simple blade or scissor device, such as secateurs, is used to trim the beak. This limits damage to the exact area of the cut may be the most precise method.

These mechanical methods rely on human precision instead of machines and, therefore, may produce variable results.

4. Infra-red Method- Here non-contact, high intensity, infrared energy source i.e. laser beam is used to cut the beaks with a laser beam in day-old chickens. Qualified endorsement by the British Farm Animal Welfare Council as a preferred choice in terms of animal welfare because of absence of open wound (Farm Animal Welfare Council, 2007). The period of time they are held is short (approximately 15 seconds) and the restraint is firm.

Age of beak trimming

The most common ages for birds to be beak-trimmed are:

- Day-old
- 5-10 days old
- 4-6 weeks
- 10-12 weeks

Touch up trim of adult birds.

Advantages

- Beak trimming improves feed efficiency and enhances the living environment.
- Minimizes aggressive pecking to the wattles, combs, feathers, feet, and vent regions. Ultimately, it minimizes the need for the culling of chickens.
- Beak trimming reduces feed intake and delays the sexual maturity and avoids feed wastage.
- Trimming of beak will increase egg production.
- Beak trimming reduces clinical welfare indicators such as plumage condition, keel bone fractures, keel bone deviations, skin wounds, and foot injuries.

Disadvantages

- Beak-trimming may lead to unnecessary pain and loss of sensory function.
- Hens must adapt to a new beak form and therefore, feeding behavior is altered (i.e., the bird's ability to consume feed is impaired).
- Beak trimming causes open wounds and bleeding, resulting in inflammation. Following healing, the tip stump may regrow and develop various irregularities in shapes and form scar tumors (Neuromas).

Alternatives to Beak Trimming

In some countries, beak trimming is banned and producers are forced to go for alternative measures to prevent cannibalism and other antagonistic behaviours. These alternatives include reducing light intensity so that birds can hardly see each other. This is only possible in houses where light can easily be controlled. Genetic manipulation, nutritional amendments like feeding of high fibre diet may lead to reduce cannibalism. The birds are introduced to enrichment devices at an early age. Enrichment devices are anything the birds can play with. Others are use of spectacles, contact uses, use of hormones etc. Despite considerable,

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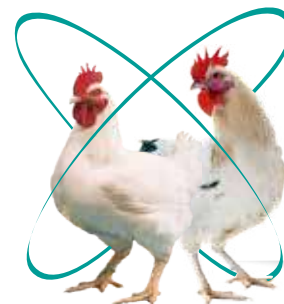
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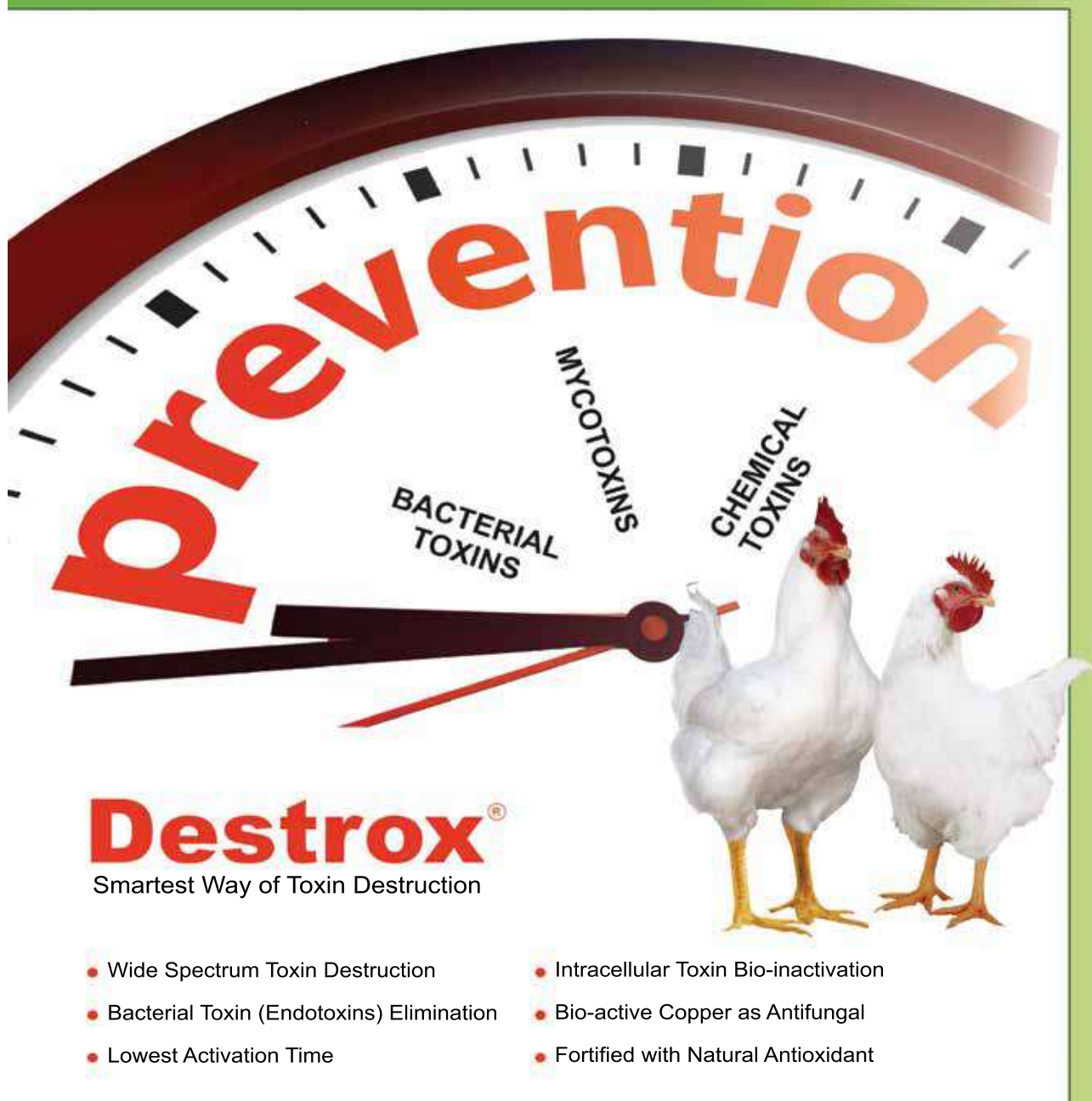
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research, there is no acceptable alternative to beak trimming as a means of preventing pecking damage that is not also contentious.

Conclusion

Beak-trimming is currently considered to be a necessary management practice for poultry. But the future of beak trimming remains uncertain; however, research suggests that alternatives are available that would address much of the welfare concerns without resulting in radical or inefficient management changes. Thus it may be concluded that beak trimming is effective management tool to minimize cannibalism and following feed restriction programme to delay puberty and optimizes egg production for

economic poultry production.

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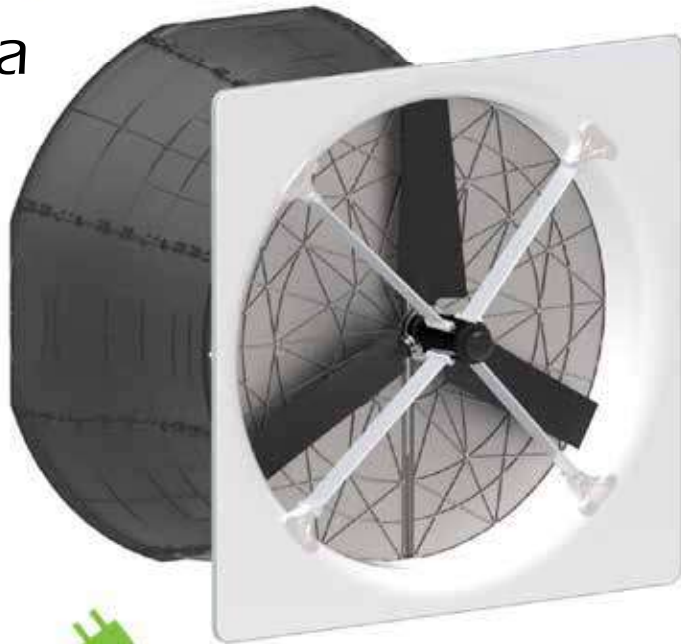


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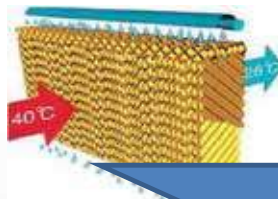
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Introduction

Respiratory infections in chicken are seen worldwide but especially in temperate poultry-producing areas in winter months. There are many common viral diseases which can affect the respiratory system (air passages, lungs, air sacs) of poultry. Dust, ammonia and other gases, and other factors associated with poor ventilation, may act as predisposing factors. Morbidity is typically 10-20%, mortality 5- 10%. If condemned birds are included mortality may be more than 10%.

Ranikhet disease

Ranikhet disease also known as Newcastle disease is highly contagious of chicken caused by paramyxovirus. There are five main forms of the disease: the highly pathogenic viscerotropic velogenic, neurotropic velogenic, mesogenic, mildly pathogenic is lentogenic and lastly is asymptomatic. In case of severely pathogenic form of the disease there is very high morbidity and mortality. Within a span of three or four days most birds on the farm can get the infection. In disease produced by less severe strains of the virus, the birds may remain asymptomatic. However, in birds that survive or those suffering less virulent form of the disease, the case get complicated and the birds become predisposed to develop secondary bacterial infections like Colibacillosis or mycoplasmosis.

Spread

The disease can spread mechanically by means of contaminated equipment, shoes, clothing and aerosol. Recovered birds are not known to act as carriers. The virus can be transmitted by contaminated equipment, shoes, clothing and free-flying birds.

Clinical Signs:

In virulent forms of the disease, the sick birds exhibit clinical signs reflecting the involvement of respiratory system, nervous system and digestive system. Signs of respiratory system involvement are non specific and include nasal discharge, difficulty in breathing, gasping and sneezing. Birds also show nervous signs which are manifested as paralysis of wings, legs or twisting of the head and neck. Birds may also suffer from diarrhea.

Lesions:

Gross lesions are seen in the digestive tract or respiratory tract. Varying amounts of mucous can be seen in the trachea. Sometimes, there may be presence of casts or plugs in the air passages of the lungs and cloudiness of the air sacs. Lungs may be congested. In the viscerotropic velogenic form of disease, which affects the digestive tract, lesions include presence of haemorrhages in proventriculus, especially at the tip of proventriculus glands, and necrotic lesions or ulceration elsewhere in the intestinal tract especially involving the region of caeca and caecal tonsils.

Vaccination and Prevention:

Vaccination is the recommended method for prevention. Use of the mild live virus vaccines called as the B1 and LaSota commonly done for prevention of the disease. The vaccines are applied into the nostril or eye or added to the drinking water or applied in the form of spray. Broiler chickens are usually vaccinated when seven to ten days of age. Chickens kept for egg production are usually vaccinated at least three times. The vaccine is given when birds are

approximately seven days, again at about four weeks and a third time at about four months of age. Revaccination while in lay is commonly practiced. There is no treatment for Newcastle disease. Good management programs and good "biosecurity" measures may reduce the occurrence of Newcastle disease virus.

Infectious Bronchitis

Infectious bronchitis caused by corona virus is an extremely contagious acute respiratory disease of chickens. The disease is characterized by coughing, sneezing and respiratory rales (rattling). In young chickens, there is severe respiratory distress occur. In layers, respiratory distress, nephritis, decrease in egg production, and loss of internal quality and external egg quality are reported.

Spread:

The disease is transmitted by aerogenous route. Other modes of spread of virus include spread by mechanical means such as clothing, poultry crates and equipment. The disease is also spread by droplet infection through the air, from bird to bird. The virus may also be spread by contaminated material and equipment, and via faeces.

Clinical Signs:

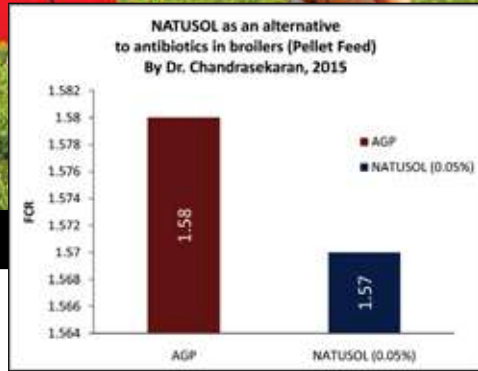
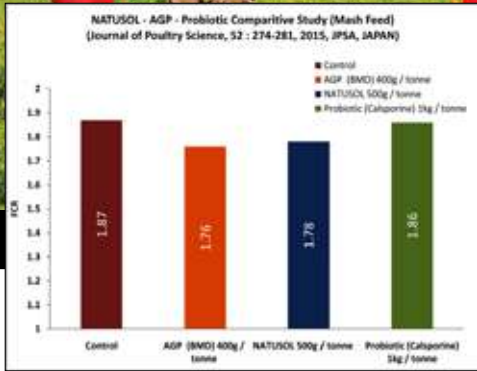
There many different strains of the virus and can affect different organ systems like respiratory tract, reproductive tract and kidneys. In broilers, the infection is mostly confined to the respiratory system. Symptoms are difficulty in breathing, gasping, sneezing, rales and watery nasal discharge. In chickens under three weeks of age, mortality may reach thirty or forty percent. In birds over five weeks



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of age, this disease does not cause a significant mortality. Feed consumption decreases sharply and growth is retarded. When infectious bronchitis occurs in a laying flock, production usually drops to near zero with a few days. Four weeks or more may be required before the flock returns to production. Some flocks never regain an economical rate of lay. During an outbreak, small, soft-shelled, irregular-shaped eggs are produced.

Lesion:

The trachea, sinuses, and nasal passages may contain serous, catarrhal, or caseous exudates and the air sacs have foamy exudates initially, progressing to cloudy thickening. Birds infected when very young may have cystic oviducts, whereas those infected while in lay have an oviduct of reduced weight and length and regression of the ovaries. Infection with nephropathogenic strains results in swollen, pale kidneys, with the tubules and ureters distended with urates; in birds with urolithiasis, the ureters may be distended with urates and contain uroliths, and the kidneys may be atrophied.

Vaccination and Prevention:

Vaccination is practiced for chickens being retained as layers. Use of the killed virus vaccines called the LaSota strain commonly done for prevention of the disease. Vaccine is usually added to the drinking water, but may be dropped into the eye or nostril or used as a spray. Biosecurity protocols including adequate isolation, disinfection are important in controlling the spread of the disease

Avian Influenza

The disease is caused by orthomyxovirus type A. This is highly zoonotic disease and can infect domestic poultry and other birds. Avian influenza viruses can cause either mild or severe viral infections depending upon whether the infection is by highly pathogenic avian influenza virus or low pathogenic avian influenza virus. The mild form of illness is categorized by listlessness, loss of appetite, respiratory distress, diarrhea, transient drops in egg production, and low mortality. The highly pathogenic form produces facial swelling, blue comb and wattles, haemorrhages seen as dark reddish spots on shanks and legs, dehydration along with respiratory distress. Mortality can reach 100 percent in case of infection by highly pathogenic avian influenza viruses. Egg production and hatchability decreases drastically.

Spread:

Direct contact with the infected birds. Avian influenza can be spread by contaminated shoes, clothing, crates, and other equipment. Insects and rodents may mechanically carry the virus from infected to susceptible poultry. The avian influenza virus can remain viable for long periods of time at moderate temperatures. As a result, the disease can be spread through improper disposal of infected carcasses and manure.

Clinical Signs:

The main symptoms are depression, loss of appetite, cessation of egg laying, nervous signs, swelling and blue discoloration of combs and wattles due to disturbance of blood circulation, coughing, sneezing and diarrhea. Sudden death can occur without any previous signs. The mortality rate may reach up to 100% depending on the species, their age, the virus type involved and environmental factors like concurrent bacterial infections.

Lesions:

Necrotic foci present in the visceral organs and also show oedema, hemorrhage, and hyperemia and also there is perivascular lymphoid cuffing. Parenchymal degenerations and necrosis occur in spleen, kidney and liver.

Vaccination and Prevention:

There is no effective treatment for avian influenza. With the mild form of the disease, good husbandry, proper nutrition, and broad spectrum antibiotics may reduce losses from secondary infections. A vaccination program used in conjunction with a strict quarantine has been used to control mild forms of the disease, strict quarantine and rapid destruction of all infected flocks remains the only effective method of stopping an avian influenza outbreak.

Infectious laryngotracheitis

It is a viral disease of chicken caused by alpha herpes virus and it is a disease of respiratory tract which also may result in severe production losses due to mortality and there is also decrease in egg production. The virus only affects the respiratory tract and strains vary in virulence. Fowls of all ages are susceptible, the disease mostly seen in field conditions in birds from 3-9 months old.

Spread:

The virus is present mainly in the exudate

from the nares, oropharynx, trachea and the conjunctiva. Infection is spread in aerosol from infected birds, i.e. through the upper respiratory and ocular routes. It enters the body through the upper respiratory tract and conjunctiva. Ingestion can also be a mode of infection.

Clinical Signs:

Clinical signs generally appear 6-12 days following natural exposure. Characteristic clinical signs include nasal discharge and moist rales followed by coughing, gasping, sneezing, depression and conjunctivitis. When severe epizootic forms of the disease occur, signs also include labored breathing and expectoration of blood-stained mucus; and upon gross examination of the trachea, severe hemorrhages and mucus plugs are characteristics.

Lesions:

Gross lesions are observed in the larynx and trachea, and tissue changes include sinusitis, and mucoid tracheitis or severe, hemorrhagic tracheitis even though the conjunctiva and other respiratory tissues could be also been affected. In severe forms, degeneration, necrosis, and hemorrhage occur in later stages. Inflammation may extend down the bronchi into the lungs and air sacs. Multinucleated cells are formed and lymphocytes, histiocytes, and plasma cells migrate into the mucosa and submucosa after 2-3 days. Intranuclear inclusion bodies are found in epithelial cells by 3 days. Inclusion bodies generally are present only in the early stages of infection and they disappear as infection progresses, a result of the necrosis and desquamation of epithelial cells.

Vaccination and Prevention:

Vaccination is done with live attenuated vaccines and viral vector recombinant vaccines. Application of biosecurity measures will avoid exposing susceptible chickens via contaminated fomites. The importance of site quarantine and hygiene in preventing the movement of potentially contaminated personnel, feed, equipment, and birds is central to successful prevention and control of ILT.

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ROLE OF POULTRY IN DOUBLING THE FARMERS INCOME

Dr. Om Prakash Dinani

Assistant Professor, C.G.K.V., Durg, C.G. 491001

It is concluded that genetic improvement of poor yielding germplasm through crossbreeding, upgrading and selective breeding to maximize their production along with local adaptability, economic feeding practices, proper health care and management practices will lead to optimization of production. MSP for poultry products, market development, product processing, packaging, value addition, cold storage facilities, easy availability of high yielding germplasm, poultry insurance, adopting diversified and integrated farming, contract poultry farming, adopting PPP model, strengthening extension services, repetition of Nammakal model for poultry production, increasing backyard poultry farming, promoting organic farming to specific areas along with increasing funding, subsidy and easy availability of bank loan for poultry farming are the key ways to double the farmers income. Farmer is not a labour or poor among the poorest, he is the ANNADATA in real sense. Agriculturer (Farmer) needed to transform into entrepreneur to double the income adopting innovative approach and technology.

Introduction

Poultry industry is the fastest growing sector in Indian agriculture. Current annual growth rate of poultry and agriculture sector are around 8 and 1.5% respectively. The total poultry population has increased by 12.39% over the previous census and the total poultry in the country is 729.2 million numbers in 2012. India ranks fifth and accounting 5% of world total poultry population. India ranks third in world egg production accounting around 78.48 billion numbers egg and availability is 61 eggs/person/year. Poultry meat contributing 45% of total meat production in India. India ranks fifth in the world in poultry meat production accounting around 3.05 MT and availability is 3.1 kg/person/year. (DAHDF annual report 2015-16, ICRA 2016).

However to increase the income in real terms would imply restructuring poultry processes & policy interventions. Fundamentally there are three ways in which income of farmers may be enhanced, viz., increasing the gross income, reducing the costs, and stabilizing the income. Increasing incomes by improving productivity, integrated and diversified farming system, better market price realization and special policy measures are needed. The strategies require four critical pillars—technology, institutions, infrastructure and incentive structure. Poultry based policy should be based on the principles of social acceptability, economic feasibility, technical viability and resource conservation ability.

Economical Poultry Feeding to increase the farmers income

1. Feed is the major constituent in the poultry production accounts for 65-75% of total recurring expenditure. Our country is about 33 % deficient in concentrate mixture required as ruminant and non-ruminant feed. Overall growth in human, livestock and poultry populations and increased demand for biofuel has outpaced the growth in cereal production leading to severe feed shortages and consequent rise in feed cost. Feed costs are primarily driven by the cost of protein sources. Substitution of expensive protein sources like soybean meal (SBM) with lower cost ingredients would potentially reduce the cost of the feed.
2. Alternate and unconventional feed resources- Alternate and unconventional feed resources help to minimize the feed cost like Azolla, earthworm meal, termite meal, feather meal, snail meal, insects etc.
3. Use of Locally available feed resources- Locally available feed resources should be used as they are cheaper and easily available in the local market along with require no transportation cost.
4. Self feed formulation - Self feed formulation reduces feed cost along with quality assurance of supply of all nutrients to the birds. Use of "Make Feed"(CARI) software-for easy and least cost feed formulation can be done for various poultry species.
5. Bulk purchasing of seasonally available raw feed ingredients - Bulk purchasing of seasonally available raw feed

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- ingredients will further reduce the feed cost along with save the margin money/benefit sharing to the middle man.
6. Value addition of feed- Value addition of feed in form of flax seed, trace minerals Se, Xanthophylls pigment incorporation etc. helpful for production of designer meat and egg.
 7. Scavenging system - Scavenging system can be adopted for Deshi fowl and improved germplasm of CARI Nirbhik, Shyama, Upcari and Hitcari etc. They can be utilized for scavenging system under Backyard poultry rearing. Deshi fowl and coloured broilers reared under scavenging system also fetches premium price in market due to more closer to organic farming.
 8. Kitchen waste, grain waste and their by products can be utilized for economic poultry rearing.
 9. Food grains of various grade from FCI godown are periodically available/auctioned at cheaper rate can be utilized for economic feeding.
 10. Building poultry cooperative network - Co-operative societies and Self Help Group(SHGs) -For bulk purchasing of feed ingredients at cheaper rate from wholesale market and local market.
 11. Initiate Small scale feed processing units-To formulate concentrate mixture at lower price.
 12. Government incentives, subsidy and interest free loan for poultry farmers to establish Small scale feed processing units.
 13. Adopting Integrated Poultry Farming System- Diversification of poultry farming activity like duck cum rice farming, duck cum fish farming etc.It will reduce poultry rearing and feeding cost. Diversification can be a major game changer. It can be of three types, viz. Product (high value enterprises), process (precision farming), and time diversification (delinking from seasonality).
 14. Establishing Feed Bank-It can be used in case of natural disaster as well as during price hike of poultry feed ingredients.
 15. Adopting diversified Poultry Farming System –Duck, Geese etc. are excellent foragers. Emu and Ostrich even able to propagate at high fibre based diet. Thus, help to reduce feed cost.
- Other approaches to increase the farmers income**
1. Implementing ambitious Agribusiness Hubs and establishing Special Poultry Zones (SPZ) -Nammakal model for poultry production can be repeated all over the country.
 2. Public-Private-Partnership (PPP) - Public-Private-Partnership (PPP) in extension should be promoted for convergence and sharing of resources.
 3. Women Poultry Producer Training -Poultry production activities are largely in the hands of women. Appropriate policy and institutional arrangements would facilitate availing credit, insurance and other inputs and marketing services. Training women would reduce drudgery to women and improve poultry productivity and enhance their economic returns.
 4. Promoting contract poultry farming- Cooperatives and agribusiness firms can promote contract poultry farming including risk coverage.
 5. Compulsory Poultry insurance- Innovative and acceptable insurance models may be designed to evolve a suitable scheme for various species of poultry.
 6. Strengthening value addition and processing facilities-Adding value to poultry by-products increases profitability.
 7. Organized slaughtering facilities- Inedible offal's and poultry wastes from the meat plant have large potential to be used as valuable proteins/materials for export along with hygienic meat production is possible.
 8. Wider and effective immunization for important economic diseases.
 9. Systematic conservation, genetic improvement and sustainable utilization of indigenous poultry breeds.
 10. 'National Poultry Plan' (NPP) should be implemented- as a National Project.
 11. Increasing funding, subsidy and bank loan- Investment linked tax incentives and attractive credit facility to private investors are missing which is needed to increase.
 12. Increasing incomes by improving productivity along with stabilizing income and risk management through holistic approach.

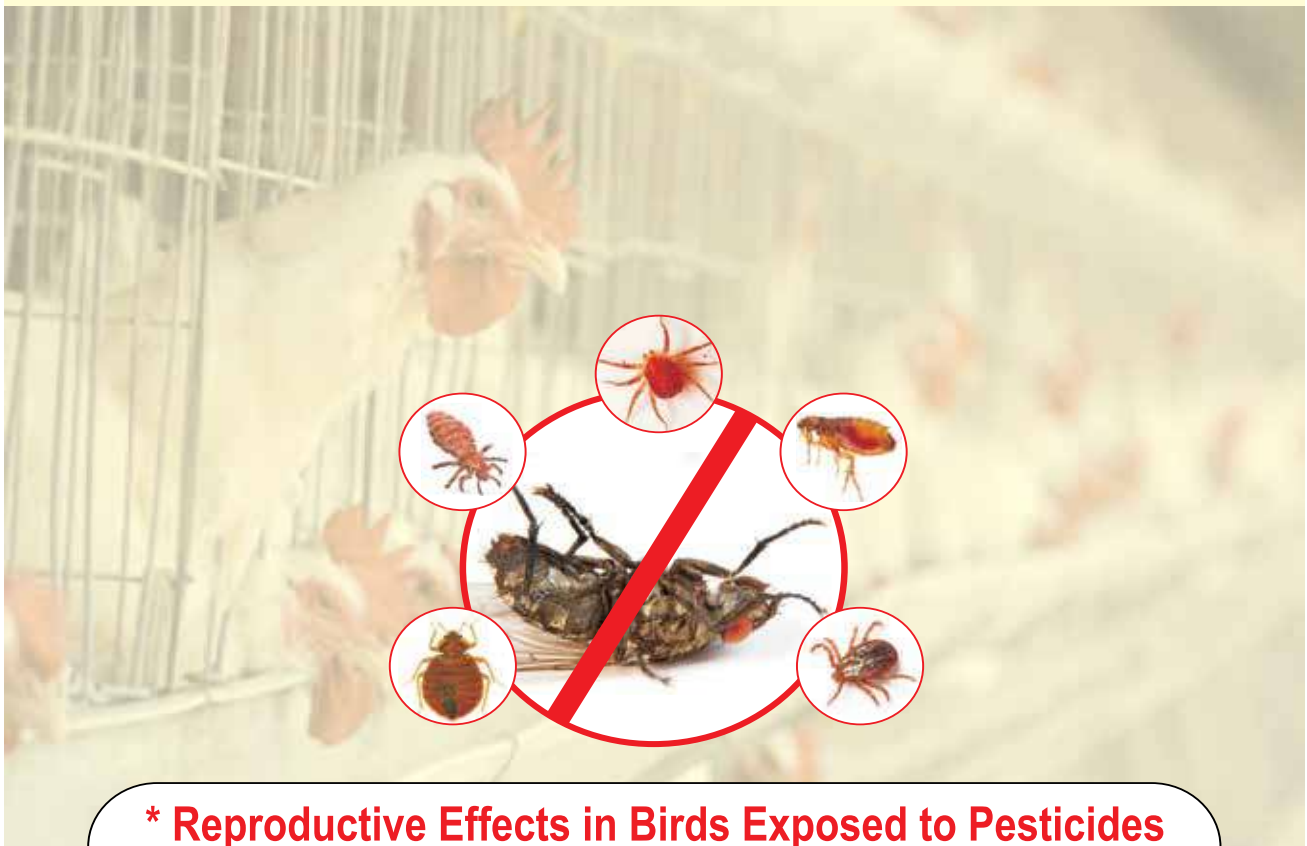
CONCLUSION

Thus, it is concluded that genetic improvement of poor yielding germplasm through crossbreeding, upgrading and selective breeding to maximize their production along with local adaptability, economic feeding practices, proper health care and management practices will lead to optimization of production. MSP for poultry products, market development, product processing, packaging, value addition, cold storage facilities, easy availability of high yielding germplasm, poultry insurance, adopting diversified and integrated farming, contract poultry farming, adopting PPP model, strengthening extension services, repetition of Nammakal model for poultry production, increasing backyard poultry farming, promoting organic farming to specific areas along with increasing funding, subsidy and easy availability of bank loan for poultry farming are the key ways to double the farmers income. Farmer is not a labour or poor among the poorest, he is the ANNADATA in real sense. Agriculturer (Farmer) needed to transform into entrepreneur to double the income adopting innovative approach and technology.

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*D. Michael Fry - Department of Avian Sciences, University of California, Davis, California - Environ Health Perspect 103(Suppl 7):165-171 (1995)

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CROP SURVEY – INDIA, KHARIF 2019

Dr. Lokesh Gupta

Technical Manager – Poultry (South Asia)

Alltech

Maize and soya de oiled cake are major ingredients used in poultry feed, contributing the greatest input cost for poultry production. In the past year, the price of maize rose by 70%, and soya de oiled cake remained high. This was due to an increased support price for farmers and low availability of these ingredients due to various reasons. Poor crop yield, lack of adequate storage facilities, panic buying, erratic rainfall and fall armyworm infestation created a surge in the price of these ingredients, resulting in higher feed costs and cost of production of animal products.

To give an impression of how the kharif crop will look over the next few months, Alltech India team members visited many key production areas of these ingredients. They spoke to farmers to understand their

concerns and investigate the quality and supply of these key ingredients to the animal feed industry.

It was observed that lower acreage sowing by farmers, heavy rains at time of harvest and fall armyworm infestation had resulted in poor yield of maize and soya crops. Soybean Processors Association of India (SOPA) has estimated that soya crop output will be around 8.8 million metric tonnes in 2019, compared to approximately 11 million metric tonnes in the previous year, which is almost 20% less.

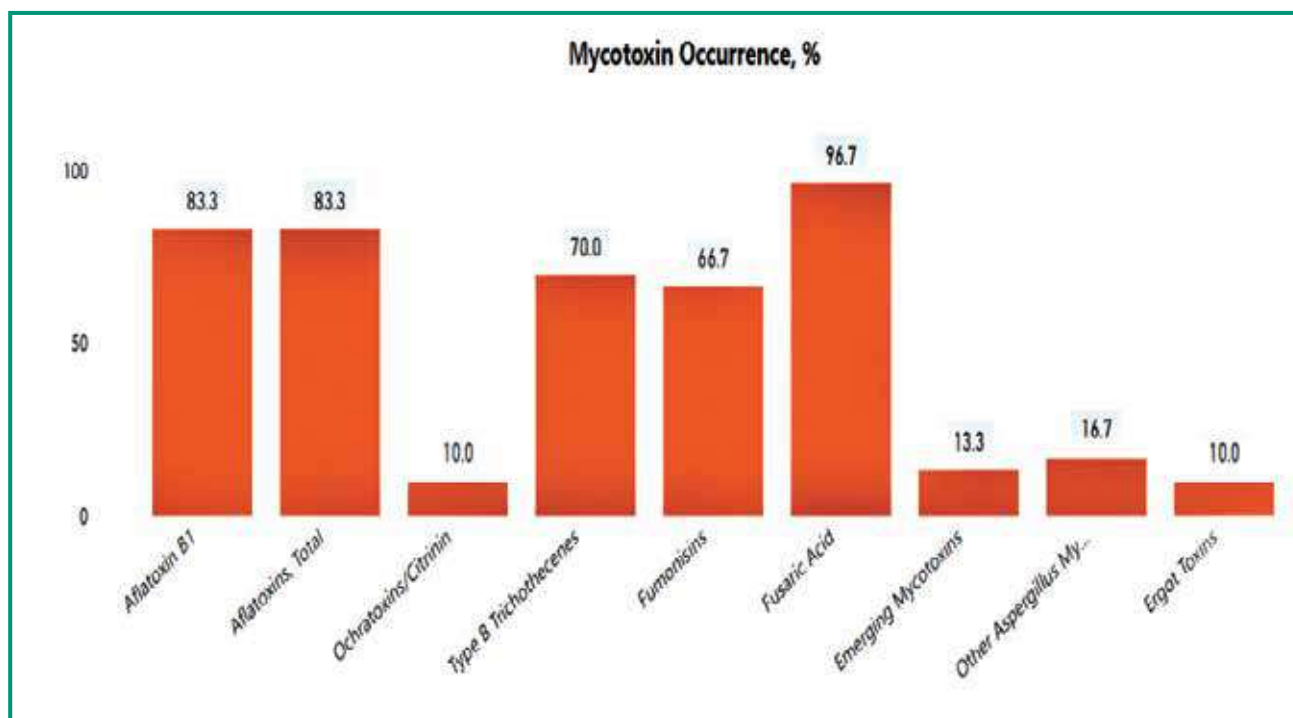
Further, maize and soybean samples were collected from the Indian states Karnataka, Maharashtra, Telangana and Madhya Pradesh during the first week of November 2019. These were assessed for quality, yield and risk associated with these in the feed chain. Samples were

tested using the Alltech 37+[®] mycotoxin analysis, which assessed the mycotoxin contamination in these ingredients using the LCMS-MS method.

Maize moisture was high due to rains, and grain quality was poor due to fall armyworm and fungal infestation.

All samples showed mycotoxin contamination. On average, 5.3 different mycotoxins were observed. Of the samples, 43% showed more than six different mycotoxins.

The most present contaminant was fusaric acid (96.7%) followed by aflatoxins (83.3%), type B trichothecenes (70%) and fumonisins (66.7%). Some samples also contained ochratoxins, citrinin and ergot toxins, as well as many other types of mycotoxins produced by *Aspergillus* and *Fusarium* species, which go unnoticed



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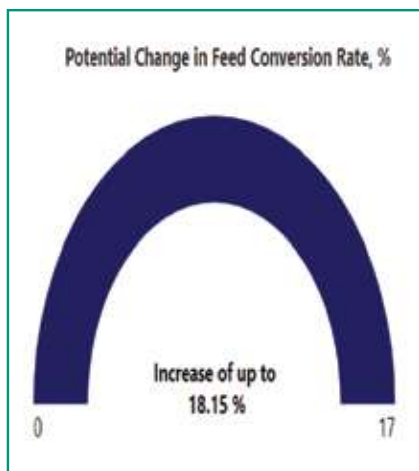
Risk Equivalent Quantity (REQ) was calculated for maize when used in poultry feeding. It was observed that 70% of maize samples were at high risk. Overall, aflatoxins and type B trichothecenes were significant mycotoxin risks.

Average Mycotoxin Assessment for Performance Impairment for Poultry - Starters

Mycotoxin Group	Average, ppb	Lower, ppb	Moderate, ppb	Higher, ppb
Aflatoxin B1	617.9	15	30	60
Aflatoxins, Total	656.5	15	30	60
Ochratoxins/Citrinin	15.4	20	40	60
Type B Trichothecenes	1206.1	300	500	700
Type A Trichothecenes	0.0	20	40	80
Fumonisin	963.1	5000	7500	10000
Zearalenones	0.0	250	500	750
Fusaric Acid	359.4	1000	2000	3000
Emerging Mycotoxins	107.8	1000	2000	3000
Other Penicillium Mycotoxins	0.0	60	140	200
Other Aspergillus Mycotoxins	1.9	80	140	200
Ergot Toxins	1.0	200	350	500
REQ	791.1	15	30	60



A potential loss of 18.15% in feed conversion and 0.32 eggs/hen/week may occur when such maize is used in broiler and laying birds, respectively.



Summary of the survey

- Due to late rains and fall armyworm infestation, maize crop is heavily affected by poor quality grains, has high moisture and mycotoxin producing fungus.
- Aflatoxins, deoxynivalenol, fumonisin and fusaric acid are the most present mycotoxins in kharif maize of all states. Multiple mycotoxins is a prevalent challenge.
- Constant monitoring is the key to reducing mycotoxin risk. Feed producers must use a suitable mold inhibitor and broad-spectrum mycotoxin binder
- Soya output is expected to have a 20% reduction in the 2019 crop year. Prices of soya DOC will remain high.

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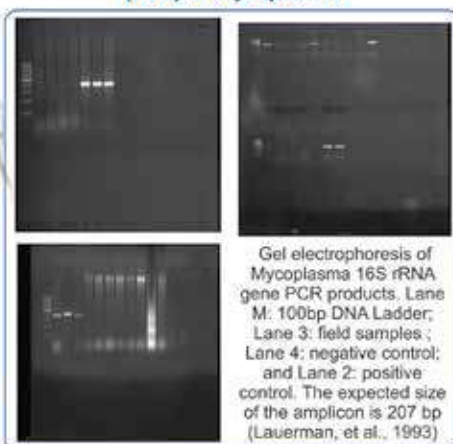
- **ANIMUNIN** contains a unique combination of essential oils which have been standardised for the presence of required active constituents.
- **ANIMUNIN** helps to prevent the colonization of bacteria, mycoplasma, fungi and viruses in the respiratory tract.
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- **ANIMUNIN** does not require any withdrawal period and completely eliminates the possibility of antibiotic residue in meat & eggs.

Scientifically tested for its efficacy in MG/MS positive flock

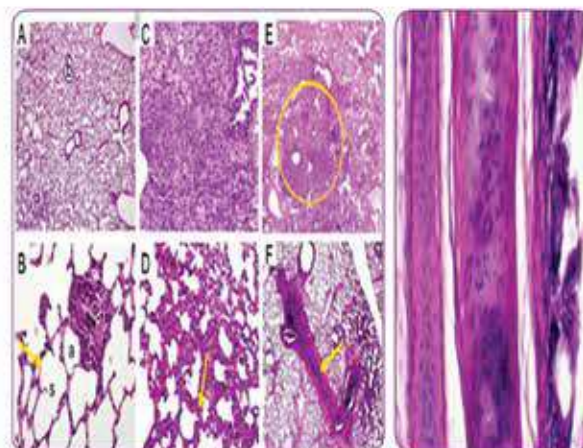
Efficacy Evaluation of Animunin® versus Tiamutin in treatment of chronic respiratory disease in the Krisbro chicks .
The experimental study is conducted on day old broiler chicks of krishibro (PDP) obtained from ICAR DPR.



The ELISA done at different time intervals to detect the status of MG/MS in control and treated birds by Polymerase Chain reaction (PCR) of Mycoplasma



Histo morphology of brochioles in different treatment groups and trachea in Herbiotic FS treated group



Feed Inclusion Rate

ANIMUNIN Powder : 750g - 1 kg per ton of feed.

ANIMUNIN Liquid : To be given once daily with drinking water.

Broilers	Layers	Quantity (For 100 Birds)
0-2 Weeks	0-8 Weeks	10 ml
3-4 Weeks	9-20 Weeks	20 ml
5th Week & onwards	21-72 Weeks	40 ml

- ▶ To be given regularly in broilers, layer-chicks and growers.
- ▶ In layers to be given regularly or 15 days every month, as required.
- ▶ Double quantity is recommended for breeders & during challenging conditions (for first 10 days).

Presentation

Powder : 10 kg & 25 kg
Liquid : 1 Ltr & 5 Ltr



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SAFE ANTI BACTERIAL SOLUTIONS FOR POULTRY CAN RADICALLY REDUCE NEED OF ANTIBIOTICS

Dr. Bhushan Bhavsar,

Managing Director - Vetphage Pharmaceuticals Pvt. Ltd.

Between reducing the use of antibiotics and dealing with rampant bacterial infections of poultry, there is need to create safe prevention solutions, writes, Managing Director - Vetphage Pharmaceuticals Pvt. Ltd.



Dr. Bhushan Bhavsar has worked for more than a decade into the food products and supplement industry. His knowledge and expertise into the industry is well respected and proven into the field of product development, regulations, research, manufacturing, packaging & designing, marketing, sales and logistics, collectively said to be providing all the services under one roof to set up your business Nationally and Internationally.

Due to his full devotion and work towards Ayurveda, Dr. Bhavsar has been chosen as President of World Ayurveda Health Organization (WAHO) working currently in 9 countries - India, Switzerland, United Kingdom, The Netherlands, Belgium, Germany, U.A.E., Brazil and Canada.

As an innovative product researcher, Dr. Bhavsar has found proven and quick solutions for many technical issues in various stages of product development. He has achieved to get two product patents in his name.

The poultry sector in India was valued at an estimated Rs. 80,000 crores in 2015-16. Thanks to increasing income and changing food habits, the demand for poultry meat as well as eggs is expected to grow steadily. The poultry meat production in the country stood at around 3.46 million tons in 2016-17, up from 3.26 million tonnes during the previous year. Similarly, the egg production also grew by around 6% during the same period. Notably, more than 80 per cent of India's poultry output is produced by organized commercial farms, while the remaining 20% comes from the unorganized sector often referred to as the backyard industry.

The growing consumption and production of poultry on commercial scale elicits a series of health and environmental concerns. Among them are concerns over bacterial disease as well as the disposal of infected birds. Prevention of diseases and ensuring healthy growth of chicken also remain significant concerns before farmers.

Bacterial diseases cause huge losses for poultry industry

Bacterial disease causes multi-billion-dollar economic losses for the livestock industry. It is estimated that *Campylobacter* and *Salmonella* infections that are rampant in poultry together account for 9 in 10 reported cases of bacteria-related food poisonings globally. There exist more than 2,000 species of bacteria belonging to *Salmonella* genus, with almost all of them being potential pathogens of poultry. In fact, a study conducted on eggs in several retail outlets in India found that large amounts of

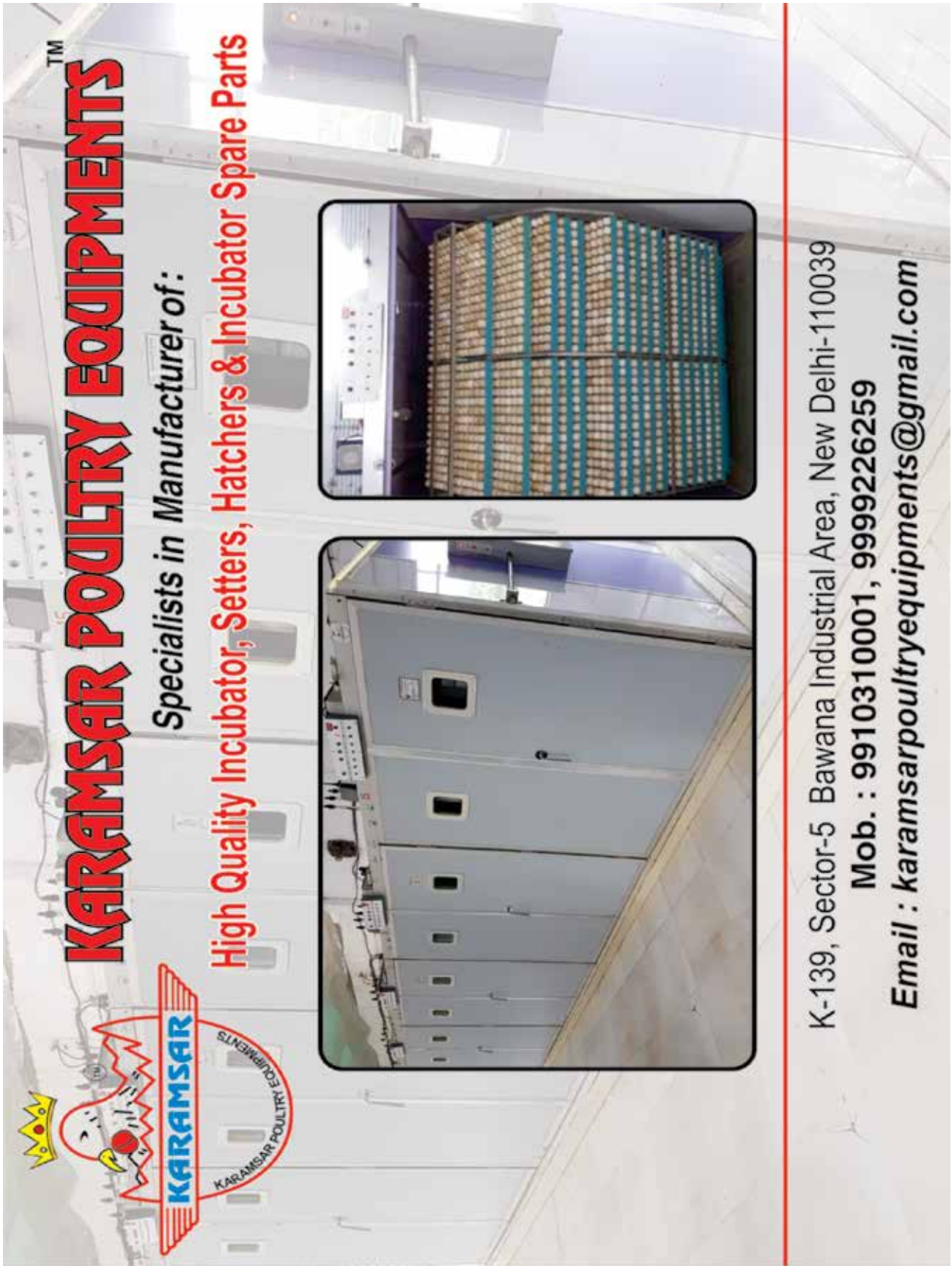
salmonella were present both on the shell and inside the egg. Coliform infections or diseases resulting from *Escherichia coli* bacteria are another significant health concern recognized as a major cause of morbidity and mortality in chickens. Often, mass culling's are necessitated to curb such infections causing huge losses to the industry. The disposal of the culled birds which is often done through mass burials further leads to concerns of environmental degradation as water bodies and soil stands to be polluted.

To treat such diseases, poultry farmers are forced to use significant amounts of antimicrobials and other veterinary drugs and feed additives which together have negative implications on human and environmental health.

Growing threat of antibiotic resistance

Estimates suggest that 70% of all antibiotics used are used in animal farming, while only 30% are used directly in humans. In the absence of effective and safe alternatives that can prevent the disease, antibiotics are used to treat diseases and prevent disease among chicken. The entry of antibiotics in our food chain has far reaching consequences on human and environmental health.

Taking note of the global threat of antibiotic resistance, the non-therapeutic use of antibiotics in animal production has been banned in many countries. Sweden was the first country to ban the use of antimicrobials for non-



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therapeutic uses in the late 1980s. Denmark, the Netherlands, United Kingdom and other European Union countries have also followed suit. Recently, the Indian government has also banned the manufacture, sale and distribution of antibiotic Colistin (often considered a 'last hope' antibiotic) for poultry and animal feed supplements to preserve its efficacy in humans.

Need for safe alternatives

However, it is important to underline that banning the non-therapeutic use of antibiotics is not enough. We also need to devise solutions to help farmers grow healthy poultry and prevent bacterial infections through natural

mechanisms. Interestingly, using bacteriophage-based preventive solutions is emerging as a sustainable and healthy alternative for disease prevention in poultry. Bacteriophages or simply known as 'phages' are microorganisms that are a natural element of our environment and exist everywhere around us including in the gut. Phages eliminate or devour their selected bacteria in a natural way without interacting with animal or human cells. This makes them absolutely safe for poultry and human beings.

Poland-based biotechnology company Proteon Pharmaceuticals has pioneered a revolutionary approach to use phages in a sustainable and controlled way to eliminate

pathogenic bacteria without causing any harm to the microbiome or gut flora of the birds. By promoting healthy growth of birds, this significantly reduces the need for use of antibiotics. They help to reduce pathogenic bacteria without side effects, without leaving any residue and without creating antibiotic resistant strains of bacteria.

Creating and popularizing such sustainable solutions is key to the overall health of poultry and human beings. It is also important that adequate awareness is raised among farmers about following correct disease management and control practices and end reckless use of antimicrobials.



Registered under Society Act 21/1860
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Poultry Farmers Broilers Welfare Federation

(A National Platform of Poultry Farmers & Poultry Industry)

Regd. Office : Plot No. 208, Anandpuri, Kanpur (UP) – 208023

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“Poultry Farmers Broilers Welfare Federation” is a nationally registered platform under “Society & Registration Act 21/1860”. The purpose of Federation is to become the voice of poultry farmers across India and raise their voice against exploitation of poultry farmers and common problems of poultry sector as well as to unite the poultry farmers and farmers’ well-wisher friends all over the country.

All the poultry farmers and well-wishers belonging to poultry sector are humbly requested to become member of the Federation. Your one valuable step towards membership of federation will make federation much stronger to fight against tremendous issues of poultry farmers and industry. By your support and unity, we make the platform stronger and capable for finding out better solutions ever as we all know that “**UNITY IS STRENGTH**” and we assure you that we will work whole heartedly and give our best so that you could proudly say that “**I am also the part of PFBWF**”.

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How to apply for the membership?

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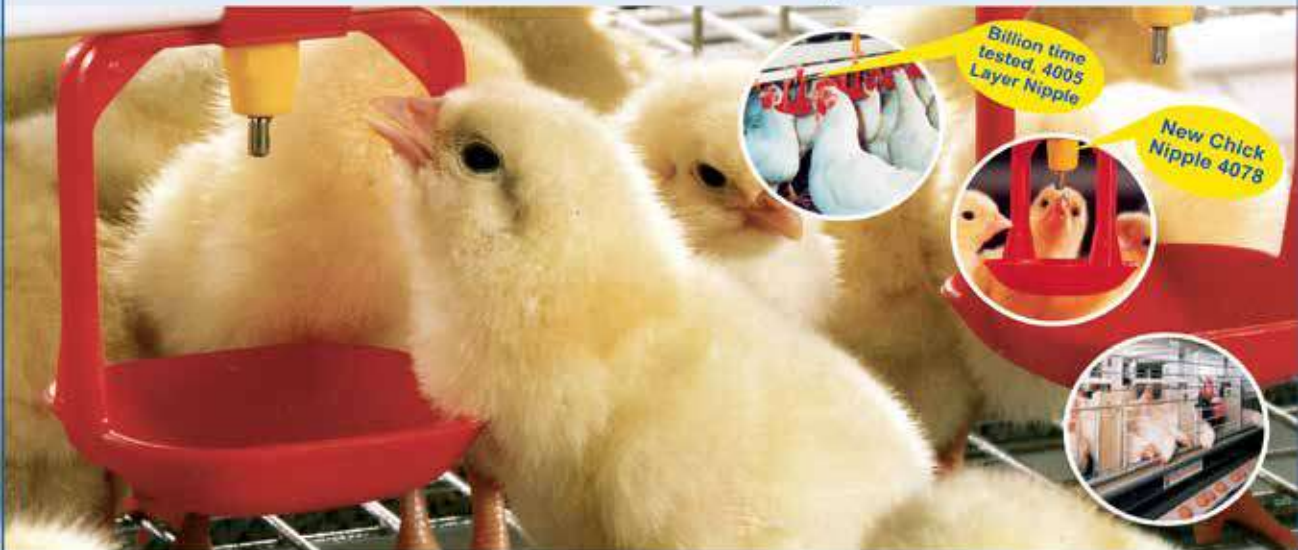
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THE SCENARIO OF POULTRY FARMING IN INDIA

Vipin¹, Kundan Kumar², Pramod Kumar Soni²

¹Ph.D. Scholar, ICAR-National Dairy Research Institute

²ICAR- Indian Veterinary Research Institute

About 8.8 % of the population in India. India has vast livestock resources. The livestock sector contributes 4.11% GDP and 25.6% of total Agriculture GDP. Poultry farming is the form of animal husbandry which raises domesticated birds such as chickens, ducks, turkeys and geese to produce meat or eggs for food.

Introduction

Livestock plays an important role in the Indian economy. About 20.5 million people depend upon livestock for their livelihood. Livestock contributed 16% to the income of small farm households as against an average of 14% for all rural households. Livestock provides a livelihood to two-third of the rural community. It also provides employment to about 8.8 % of the population in India. India has vast livestock resources. The livestock sector contributes 4.11% GDP and 25.6% of total Agriculture GDP. Poultry farming is the form of animal

husbandry which raises domesticated birds such as chickens, ducks, turkeys and geese to produce meat or eggs for food. Poultry mostly chickens are farmed in great numbers. Chickens raised for eggs are known as layers, while chickens raised for meat are called broilers.

Change in the poultry population

Tamil Nadu, Andhra Pradesh and Telangana states are first, second and third in poultry population whereas Assam (71.63%) and West Bengal (46.34%) have maximum growth in poultry population during the year 2012 to 2019.

Category	Population (In Million) 2012	Population (In Million) 2019	% Change
Total poultry	729.21	851.81	(+)16.81
Backyard poultry	217.49	317.07	(+)45.48
Commercial poultry	511.72	534.74	(+)4.50

Source- 20th Livestock Census (2019), Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture and Farmers Welfare, Govt. of India.

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POULTRY FARMING IN WINTER

Poultry farming in winter require temperature administration of poultry house which is a critical pre-condition for better generation and well being of birds and better profit while doing poultry farming in winter .

To get the maximum profit out of the poultry farming business, the birds should be free from all types of stress. Nowadays, poultry is facing stress of harsh cold weather which needs proper management of temperature, humidity, litter, ammonia, feed, water, light and ventilation etc. These are of much importance while managing the birds as they affect its health and production.

Winter season has incredible impact on poultry generation by bringing down the temperature of encompassing. Amid winter when temperature goes down and different issues like decrease in egg generation, lessening in water consumption, diminishment in fruitfulness and hatchability and so forth happens. Consequently, the administration of poultry amid winter is an essential sympathy toward poultry agriculturist.

While doing poultry farming in winter should take proper care at the following points.



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Fowls discharge a ton of dampness in their breath and droppings which antagonistically influences their well being, if there is confined ventilation it causes smelling salts develop noticeable all around which causes respiratory issues. In this way, they require a lot of outside air circling around the house. For the reason sliding windows are valuable as they can be opened amid day and shut amid night. There ought to likewise be course of action of fumes fans to evacuate unclean air. The first 24 to 48 hours is crucial in the bird's life as this affects health and performance throughout the whole production cycle. While doing poultry farming in winter number of feeders ought to be expanded when contrasted with summer. Lower winter temperatures cause the air entering the house to fall very quickly to the floor due to the increased weight of moisture instead of mixing with the warmer air in the house and falling more slowly.

1. Poultry House Management
2. Poultry Ventilation Management
3. Poultry Litter Management
4. Poultry Feeding Management
5. Poultry Water Management

Poultry House Management :

The temperature is of much importance even before the arrival of chicks. One must say that optimum temperature requirements are more important for young chicks than older ones because older birds are better insulated with feathers, have less surface area and produce more heat than young chicks. For the day-old chicks, the shed should be pre-heated one to two days before the arrival of chicks. If it is not, the air and the litter will absorb heat from the bodies of the chicks and the birds may start shivering with cold. This will affect the growth of the birds.

The other thing is uniform distribution of temperature. The behaviour of the birds is a good parameter to assess whether the temperature is uniform in the whole shed or not. If the birds huddle close to the heating source, it indicates cold environment. In some situations, the birds are found in patches, called as 'comfort zones'. The formation of comfort zones should be avoided by constant circulation and re-circulation of air.

The first thing is the insulation of the house. An insulated house provides opportunity of controlling cold air inside the shed. Walls give better insulation than open-sided house having curtains. One must ensure that there are no holes, cracks and crevices in the wall or roof from where air may enter. The pads must be sealed with some plastic or polythene sheets.

Poultry house ought to be composed in such an approach to give all the solace required by winged creatures amid winter. Introduction of a building as for wind and sun therefore impact temperature, and light on diverse outer surfaces. In winter the bend of the sun's noticeable way is abbreviated, an east west arrangement of a rectangular house gives a greatest increase of sunlight based vitality in winter. House ought to be composed in a way that most extreme daylight enters the shed amid day time. Feathered creatures ought to be shielded from chilled winds, for this gunny packs ought to be hanged at the spots from where the frosty air enters. These gunny packs ought to be hanged down when daylight goes at

night till the landing of daylight next morning. Getting brooding right is especially important in winter. While the method does not change with regard to temperatures and relative humidity inside the house, the cost and time to achieve the same results does increase.

Poultry Ventilation Management:

Fowls discharge a ton of dampness in their breath and droppings which antagonistically influences their well being, if there is confined ventilation it causes smelling salts develop noticeable all around which causes respiratory issues. In this way, they require a lot of outside air circling around the house. For the reason sliding windows are valuable as they can be opened amid day and shut amid night. There ought to likewise be course of action of fumes fans to evacuate unclean air. The first 24 to 48 hours is crucial in the bird's life as this affects health and performance throughout the whole production cycle. While doing poultry farming in winter number of feeders ought to be expanded when contrasted with summer. Lower winter temperatures cause the air entering the house to fall very quickly to the floor due to the increased weight of moisture instead of mixing with the warmer air in the house and falling more slowly.

As this cold, damp air falls, bedding/litter can start to "go off" even in the early stages. It is therefore crucial to adjust ventilation and heating on a daily, or even hourly basis, to combat this effect.

It is important to get the air and floor temperatures correct, as chicks don't have the ability to regulate their own body temperature until they are 12-14 days old.

Cold weather ventilation or winter ventilation is totally a new chapter as compared to the hot day's ventilation. Farmers find it a nightmare to control ventilation in winter. Just look at the following points to control your cold weather ventilation.

Proper insulation and sealing of the shed is a prerequisite. The fans should be operated at their minimum capacity to contain maximum heat inside the shed. If this minimum ventilation is not provided, the inside air quality will deteriorate.

Increase the ventilation rate according to the age. Ventilation rate may be further increased if there is ammonia or wet litter problem. If ventilation rate is increased, add some heat

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in the air. If the house is hot, just adjust the addition of heat but don't tune the fan because fans are required for removal of moisture and ammonia.

If litter gets dusty, decrease the ventilation rate, because extra dry litter may result in respiratory problems in the birds. Fresh air coming in should be mixed well with warm air before reaching the birds. Additional fans can be used to recalculate the warm air to save the cost.

With reference to laying birds, one thing very important is light management. Naturally, birds go on molting in short days i.e. in winter. The process of natural molting takes about four months and hence the birds go out of production. In such circumstances, it is very much important to give extra dose of light to keep them in production. Normal light duration of 14-16 hours is recommended.

Poultry Litter Management:

Before chick being put in house, the surface of floor ought to be secured with a bedding material called litter. It offers solace to the winged animals. A decent quality litter serves as an encasing in keeping up uniform temperature, likewise ingests dampness and advances drying. It weakens fecal material in this way diminishing contact in the middle of feathered creatures and fertiliser. It likewise protects the chicks from the cooling impacts of the ground and gives insurance pad in the middle of fowl and floor. Around 6 inches of litter is required in houses amid winter. The litter offers warmth to the flying creatures amid winter. In the event that litter administration is appropriate, it will be felt entirely warm when taken close by.

The litter is required to be managed efficiently because it gets wet quite easily with water coming from loose water pipe connections, drinkers, droppings and roof. This will result in cake formation in the litter which becomes good medium for anaerobic bacterial growth and ammonia production.

Normally litter moisture is maintained with in the range of 25-35 per cent. The heating and ventilation systems must be continuously monitored to ensure optimum level of moisture. Wetting of litter is further prevented by quality feed and water. Feed containing high quantities of wheat and barley, and water having high percentage of minerals like sodium, magnesium and chloride make the droppings soft that add up the moisture of the litter. If litter gets too

much wet and there is cake formation then it is better to replace it.

Another issue of increasingly concern is production of bad odour, especially in the farms close to population. It is also an outcome of wet litter. If the litter is kept dry and there is an efficient ventilation system, this problem is automatically solved. Low pH also retards the degradation of the organic matter.

Poultry Feeding Management:

Poultry utilise nourishment for two fundamental purposes i.e., as a vitality source to keep up body temperature and to bear on ordinary physiological exercises and as building material for advancement of bones, substance, quill, egg and so on.

The variety in food utilisation is littler for every degree Fahrenheit change in temperature when the climate is frosty than when it is hot. Low temperature causes more encourage admission and higher oxygen request. Subsequently, when the climate gets colder, it is crucial to give the chicken a lot of sustenance as they require additional vitality for keeping up body temperature.

Consumption of calories of ME/winged animal/day shifts as the surrounding temperature changes. Typically these distinctions are as per the following:

When winged animal eat more nourish, alongside vitality, different supplements are additionally devoured more which are really not required and they turn into a waste. To maintain a strategic distance from this wastage amid winter vitality rich sources like oil/fat ought to be added to the eating regimen or level of different supplements may be decreased keeping the vitality at same level.

To give the chicks the best start they should be feeding and drinking as soon as possible. Producers should provide additional feed on paper placed on the floor, together with supplementary drinkers, allowing the least travel for any chick.

It is useful in the first 24 to 48 hours after placing to select a random sample of chicks a few times and gently check that the crop is full, soft and round to show that feed and water are present and the chick is thriving.

Feed and water must be of good quality to allow the chick to start the growing process immediately and aid absorption of the yolk sack.

Feed ought to be accessible to the feathered

creature entire of the day. It has been tentatively demonstrated that for legitimate development of oven amid summer, diet containing 23% protein and 3100 Kcal ME/kg eating regimen is required. While in winter 3400 Kcal/kg ME and 23% protein is required. Raising the amino acid levels, even above recommended levels, will support better FCR, higher growth rates, and higher breast meat yields. Amino acid density then becomes a matter of setting economic priorities. Higher protein diets will result in higher water intake, more water excretion and higher depositions of nitrogen in the litter. So it is important to feed Amino Power from first day to twentieth at least.

The maintenance of caloric values in the feed also needs high consideration. Poultry feed should have high caloric value as compared to feed offered in summer season, such type feed keeps the birds warm.

Poultry Water Management:

During poultry farming in winter season winged creatures take less water so far support of water in the body, it is important to give constant supply of new water which can be taken by the feathered creature.

Water must be crisp and clean and you should mix Aquacure in drinking water. On the off chance that water is sufficiently chilly, then it ought to be given to chicken in the wake of adding boiling hot water to it, so that the water comes to ordinary temperature.

In ice falling territories, blockage of funnel is a major issue because of solidifying of water amid winter season. At the point when temperature goes underneath 0°C routine assessment of funnel line ought to be done to dodge blockage of water.

Many of immunisations /prescription/anti-stress vitamins like Growvit Power & Immune Boosters should be given to poultry through water. As water utilisation of winged animal is decreased amid winter season. Thus, care ought to be taken that waters are uprooted couple of hours before water pharmaceutical and solution/immunisation is given in less measure of water so feathered creatures can expend complete water and every flying creature get advantage of medication/antibody or different poultry supplements.

Keeping chickens through the winter is not a hard thing to do with the right information & quality poultry healthcare products. I hope this article will be helpful for you, doing poultry farming in winter.



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NECROPSY FINDINGS IN MAJOR POULTRY DISEASES

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Marek's disease is a lymphomatous disease of domestic chicken, caused by herpes virus. In the nervous form there are no gross lesions. However, lesions on nerves are only visible under microscope. In viscerous form, greyish white tumours are found in the ovaries, liver, spleen, kidney, heart and other organs. Lesions in the eye appear as loss of pigmentation of iris due to infiltrating lymphocytes with irregular pupil causing blindness called 'grey eye'.

Introduction

Post mortem inspection covers the inspection of the carcasses and parts of meat and poultry used for human food. It takes place after the poultry has been slaughtered or dies due to any infection. Thus, the term 'post mortem', which means 'after death' in Latin is used. The purpose of post mortem inspection is to protect the public health by ensuring that the carcasses and parts that enter commerce are wholesome, not adulterated, properly marked, labelled and packaged. It is also a very important diagnostic tool that is used to support other procedures performed in the diagnosis of disease conditions in birds. There are several other reasons for performing post mortem examination which includes finding the cause of death, confirming a diagnosis, investigating unsuccessful therapy, increasing knowledge or satisfying curiosity. Necropsy procedures are performed in a systematic manner. This is performed at regular basis in organized poultry farms to check the mortality rate. The procedures include collection of history, external examination and preparation of carcass, opening the body cavities, examination of organs and finally the carcass should be well disposed after proper examination to avoid spread

of disease to human and animals.

Post mortem findings in different diseases in poultry birds

Infectious bursal disease

It is an acute, highly infectious lymphocidal disease of young, sexually immature chickens caused by virus belonging to Birnaviridae family. In post mortem, we notice haemorrhagic and atrophied bursa with presence of white caseated material in the lumen of bursa, haemorrhages in thigh and pectoral muscle, haemorrhages at the junction between proventriculus and gizzard. Kidneys appear swollen and pale with accumulation of urates in tubules; liver appears pale and bile stained with necrotic foci.

Avian influenza

It is caused by influenza virus belonging to family orthomyxoviridae. Post mortem findings include subcutaneous edema of head and neck; inflammation of sinuses, trachea, air sacs and conjunctiva; congestion of musculature and dehydration, haemorrhagic tracheitis, petechial haemorrhages in proventriculus-gizzard junction. Kidneys are observed to be severely congested with distended

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ureters, pinpoint haemorrhages in muscles, abdominal fat, peritoneal surfaces of proventriculus and gizzard, pericardium and ovarian follicle, necrotic foci on spleen, haemorrhagic caecal tonsils, and peritonitis with ruptured yolk material.

Marek's disease

Marek's disease is a lymphomatous disease of domestic chicken, caused by herpes virus. In the nervous form there are no gross lesions. However, lesions on nerves are only visible under microscope. In viscerous form, greyish white tumours are found in the ovaries, liver, spleen, kidney, heart and other organs. Lesions in the eye appear as loss of pigmentation of iris due to infiltrating lymphocytes with irregular pupil causing blindness called 'grey eye'.

New castle disease

It is an acute contagious disease of domestic chickens caused by Type 1 Avian Paramyxovirus. Post mortem lesions include haemorrhagic ulcers on the mucosal lining of intestines, pinpoint haemorrhages on the tips of proventricular glands, haemorrhagic caecal tonsils, congestion and haemorrhages in trachea, air sacculitis, egg peritonitis among layers and marked congestion of pectoral muscles.

Fowl cholera

It is one of the most virulent and highly septicemic disease caused by *Pasteurella multocida*. Lesions seen in per-acute and acute cases include marked congestion of the carcass, multiple petechiation throughout viscera, multiple pin point necrotic foci in the liver. Presence of free yolk in body cavity, edema of lungs, pneumonia and perihepatitis are observed in layer birds. In chronic form we see caseous arthritis of hock joints, swelling and induration of one or both wattles, caseous exudates in the middle ear.

Pullorum disease

This disease mostly affects young chicks and is caused by *Salmonella pullorum*. Post mortem findings include unabsorbed yolk sac, peritonitis, congested lungs, dark, swollen and haemorrhagic liver and typhlitis. In growers, arthritis of hock joint is seen with the presence of lemon or orange coloured gelatinous material. In adults, abnormal ovary with ova, peritonitis, arthritis and pericarditis are seen.

Fowl typhoid

This is also known as Infectious Enteritis and is caused by *Salmonella gallinarum*. In acute phase, we see lesions like septicaemic and jaundiced appearance, congested skeletal muscles; swollen, friable and dark red liver with coppery bronze sheen surface, enlarged spleen, catarrhal enteritis, characteristic dark brown bone marrow. In chronic phase, emaciation, anaemia, focal necrosis in heart, intestine, pancreas and liver are seen. Greyish white necrotic foci seen in the myocardium, mucosa of intestine and pancreas, pericarditis with morbid yellow fluid in the pericardial sac, retained yolk which may subsequently rupture in layers.

Colibacillosis

It is caused by *Escherichia coli*. Post mortem findings include air sacculitis, perihepatitis, pericarditis, and peritonitis. Liver, spleen, lungs and kidneys are dark and congested; air sacs are thickened, opaque and white. Fibrinous pericarditis with thickened pericardial sac adhering to surface of the heart is a characteristic feature of this disease. The surface of the liver is also covered with gelatinous, greyish fibrinous material.

Aspergillosis

It is also known as Brooders Pneumonia or Pneumomycosis caused by *Aspergillus fumigatus*. In post mortem, presence of small, white caseous nodules measuring approximately 1 mm in diameter are seen

scattered throughout the lung tissue and also air sacs. Lesions in brain tissue appear as white to yellow circumscribed areas.

Candidiasis

This is also known as Moniliasis or Thrush. It is caused by *Candida albicans*. Lesions are common in crop and to lesser extent or frequency in mouth, oesophagus and proventriculus. In acute cases, crop lining will be thickened and opaque. In chronic cases, the crop reveals raised white patches of ulceration and still in most severe case, there will be turkish towel appearance of crop with thickening. Mouth, oesophagus and proventriculus reveal ulceration and inflammation.

Coccidiosis

It is an expensive and very common disease of poultry that cause significant economic loss with universal importance and is caused by a protozoan parasite belonging to genus *Eimeria*. Lesions are mostly seen in intestinal tract in the form of haemorrhages and massive swellings. Serous surfaces reveal white focal lesions and haemorrhagic spots. Intestinal contents consist of blood and mucus mixed with necrotic material which is described as gruel like mass.

Conclusion

Population growth, urbanization and the rise of income has increased the demand for animal protein at an exponential rate. The commercial poultry population has increased by 4.5% over the previous census and backyard poultry has increased by 45.8%. An increase of 16.8% has been observed in the total poultry population of the country. Thus, we must provide quality treatment to the poultry farmers and stakeholders in order to popularize poultry farming in India. This can serve as a revolution to cater the protein needs of the citizens. Post mortem examination helps in proper diagnosis of disease and in control of death in case of outbreaks and further treatment and prevention.

INFECTIOUS BURSAL DISEASE IN POULTRY, ITS DIAGNOSIS, TREATMENT AND CONTROL

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Division of Veterinary Pathology, F.V.Sc & AH, SKUAST- Jammu, J&K, India (181102).

Only chickens (Gallus gallus) develop IBD after infection by serotype 1 viruses. Turkeys (Meleagris gallopavo) may be asymptomatic carriers of serotype 2 and at times, of serotype 1 viruses whose pathogenicity for turkeys is ill-defined. The Pekin duck (Cairina moschata) can also be an asymptomatic carrier of serotype 1 viruses.

Anti-IBDV antibodies have been detected in guinea-fowl (Numida meleagris), common pheasants (Phasianus colchicus) and ostriches (Struthio camelus) which have also been demonstrated to carry serotype 2 viruses. Neutralising or precipitating antibodies have been detected, inter alia, in various species of wild duck, goose, tern, puffin, crow and penguin, which may mean that wild birds act as reservoirs or vectors.

Introduction

Infectious bursal disease, IBD (also known as Gumboro disease, infectious bursitis and infectious avian nephrosis) is a highly contagious disease of young chickens caused by infectious bursal disease virus (IBDV), characterized by immunosuppression and mortality generally at 3 to 6 weeks of age. IBDV is a non-enveloped, double-stranded RNA (dsRNA) virus belonging to the Birnaviridae family. The disease was first discovered in Gumboro, Delaware in 1962. It is economically important to the poultry industry worldwide due to increased susceptibility to other diseases and negative interference with effective vaccination. In recent years, very virulent strains of IBDV, causing severe mortality in chicken, have emerged in Europe, Latin America, South-East Asia, Africa and the Middle East. Infection is via the oro-fecal route, with affected bird excreting high levels of the virus for approximately 2 weeks after infection.

Economic impact

It causes heavy mortality in the chickens of 3 weeks of age. It causes immunosuppression which leads to vaccination failure, E.coli infection, gangrenous dermatitis, & inclusion body hepatitis.

Incidence and distribution

The first report of a specific disease

affecting the bursa of Fabricius in chickens was made by Cosgrove in 1962. The first cases were observed in the area of Gumboro, in Delaware (United States of America [USA]), which is the origin of the name, although the terms 'IBD' or 'infectious bursitis' are more accurate descriptions. Between 1960 and 1964, the disease affected most regions of the USA, and reached Europe in the years 1962 to 1971. From 1966 to 1974, the disease was identified in the Middle East, southern and western Africa, India, the Far East and Australia.. Infectious bursal disease is currently an international problem: 95% of the 65 countries that responded to a survey conducted by the Office International des Epizooties (OIE) in 1995 declared cases of infection, including New Zealand which had been free of disease until 1993. These findings led to the adoption of a specific resolution of the International Committee of the OIE during the 63rd General Session in May 1995.

Epidemiology Host range

Only chickens (Gallus gallus) develop IBD after infection by serotype 1 viruses. Turkeys (Meleagris gallopavo) may be asymptomatic carriers of serotype 2 and at times, of serotype 1 viruses whose pathogenicity for turkeys is ill-defined. The Pekin duck (Cairina moschata) can also be an asymptomatic carrier of serotype 1

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viruses.

Anti-IBDV antibodies have been detected in guinea-fowl (*Numida meleagris*), common pheasants (*Phasianus colchicus*) and ostriches (*Struthio camelus*) which have also been demonstrated to carry serotype 2 viruses. Neutralising or precipitating antibodies have been detected, inter alia, in various species of wild duck, goose, tern, puffin, crow and penguin, which may mean that wild birds act as reservoirs or vectors.

Transmission

The virus can be transmitted mainly from infected to susceptible birds through water, feeds, droppings and fomites. Other means of transmission such as through the intermediary role of vermines like the lesser meal worm, mites and mosquitoes have also been reported. The disease is characterized by a short incubation period of 2-3 days.

Morbidity and mortality

Infectious bursal disease is extremely contagious. In infected flocks, morbidity is high, with up to 100% serological conversion, after infection, whilst mortality is variable. Until 1987, the field strains isolated was of low virulence and caused only 1% to 2% of specific mortality. However, since 1987 an increase in specific mortality has been described in different parts of the world. In the USA, new strains responsible for up to 5% of specific mortality were described. At the same time, in Europe and subsequently in Japan, high mortality rates of 50% to 60% in laying hens and 25% to 30% in broilers were observed. These hypervirulent field strains caused up to 100% mortality in specific-pathogen-free (SPF) chickens.

Clinical signs

The incubation period is very short: two to three days. In acute cases, the animals are exhausted, prostrated, dehydrated, suffer from watery diarrhoea, and feathers are ruffled. Mortality commences on the

third day of infection, reaches a peak by day four, then drops rapidly, and the surviving chickens recover a state of apparent health after five to seven days. Disease severity depends on the age and breed sensitivity of the infected birds, the virulence of the strain, and the degree of passive immunity.

Macroscopic lesions

Macroscopic lesions observed principally in the bursa which presents all stages of inflammation following acute infection. Autopsies performed on birds that died during the acute phase (three to four days following infection) reveal hypertrophic, hyperaemic and oedematous bursas. The most severe cases are characterised by a major infection of the mucous membrane and a serous transudate, giving the bursal surface a yellowish colour. This appearance is often accompanied by petechiae and haemorrhages. By the fifth day, the bursa reverts to normal size and by the eighth day becomes atrophied to less than a third of the normal size. The affected animals are severely dehydrated, and many birds have hypertrophic and whitish kidneys containing deposits of urate crystals and cell debris. Haemorrhages in the pectoral muscles and thighs are frequently observed, probably due to a coagulation disorder. Certain variants from the USA are reported to cause rapid atrophy of the bursa without a previous inflammatory phase. Moreover, in the acute form of the disease caused by hypervirulent strains, macroscopic lesions may also be observed in other lymphoid organs (thymus, spleen, caecal tonsils, Harderian glands, Peyer's patches and bone marrow).

Serological diagnosis

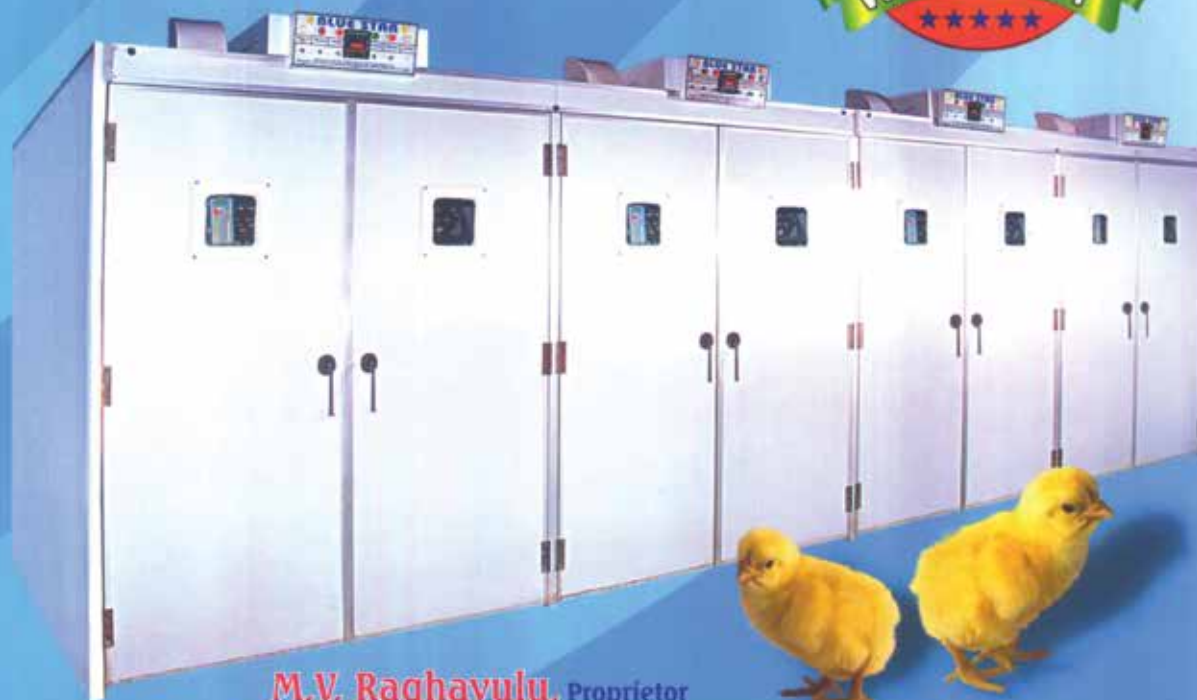
In areas contaminated by IBDV, most broiler flocks have anti-IBDV antibodies when leaving the farm. Current serological tests cannot distinguish between the antibodies induced by pathogenic IBDV and those induced by attenuated vaccine viruses, so serological

Infectious bursal disease is extremely contagious. In infected flocks, morbidity is high, with up to 100% serological conversion, after infection, whilst mortality is variable. Until 1987, the field strains isolated was of low virulence and caused only 1% to 2% of specific mortality. However, since 1987 an increase in specific mortality has been described in different parts of the world. In the USA, new strains responsible for up to 5% of specific mortality were described. At the same time, in Europe and subsequently in Japan, high mortality rates of 50% to 60% in laying hens and 25% to 30% in broilers were observed. These hypervirulent field strains caused up to 100% mortality in specific-pathogen-free (SPF) chickens.

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diagnosis is of little interest in endemic zones. Nonetheless, the quantification of IBDV-induced antibodies is important for the medical prophylaxis of the disease in young animals, in order to measure the titer of passive antibodies and determine the appropriate date for vaccination or in laying hens to verify success of vaccination. Serology is likewise essential to confirm the disease-free status of SPF flocks. Each serological analysis must include a sufficient number (at least twenty) of individual serum samples representative of the flock under study. A kinetic study requires at least two serological analyses separated by an interval of three weeks (paired sera).

The most widely used quantitative tests are the detection of precipitating antibodies by agar gel immunodiffusion (AGID) enzyme-linked immunosorbent assay (ELISA).

Agar gel immunodiffusion is the simplest, but least sensitive technique. Results are obtained after an incubation period of 48 h. Variability in results may be due to the investigator, as well as the nature of the viral strain used as an antigen.

Serum neutralisation presents the disadvantages that specialized equipment and five days incubation are required. The technique is much more sensitive than AGID and correlates better with the level of protection of the subjects tested.

The ELISA is the most rapid and sensitive method, and presents the fewest variations due to the viral strain used as an antigen. Considerable inter- and intra-laboratory variability can occur with certain commercial kits. Although the correlation between results obtained using SN and ELISA is high, ELISA remains less sensitive, and does not detect low neutralizing titres which are sufficient to block vaccine administration (residual maternal antibodies). Enzyme-linked immunosorbent assays which use a recombinant VP2 protein as the sole antigen may be better correlated with protection.

Vaccination schedule

- Commercial broilers- 13 day intermediate plus in drinking water.
- Commercial layers- 14 & 28 day standard intermediate plus in drinking water & on 21 day intermediate plus in drinking water.
- For breeder hen- Traditionally at prelay stage & midlay stage IBD inactivated vaccine is given to get high antibody titer.

Resistance

Resistance Birds with maternal antibody are resistant due to high antibody titer. when antibody titer drops birds become susceptible. Very virulent strain can break the antibody barrier at young age. Older

birds in which bursa is reduced in size & disappears are more resistant.

Control

- Control thorough cleaning & disinfection of the houses between the flocks & the practice all in , all out management. It delays infection & also provides time for vaccines to produce immunity.
- Hygienic & Sanitary precautions.
- Formaldehyde & Ionophores are found to be effective disinfectants.
- Removal of vectors like mealworms & Rats.
- Proper vaccination of birds & flock



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OPERATIONS, PROCEDURES, INITIATIVES AND MEASURES OF BIOSECURITY AT EGG PROCESSING PLANT

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Department of Livestock Products Technology

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The use of enhanced vaccination programs and strategic prophylactic medications are a useful tool to limit disease build up on free-range operations. Increased exposure to wild birds is considered a biosecurity risk and most importantly to waterfowl, particularly wild ducks belonging to the Order Anseriformes (includes the Wood duck, Chestnut Teal, Freckled duck, Black duck and Whistling duck). It is important for the free-range area not to have environmental and amenity factors that attract congregations of large numbers of wild birds or surface water for ducks. Wild water fowl surveillance identifies that most ducks have at some stage been exposed to avian influenza (AI) and more importantly at any one time a small percentage of these are shedding virus in their faeces that can contaminate surface water and pastures.

Abstract

Biosecurity refers to programs intended to protect human, animal or even plant life. Biosecurity can be defined as a practice or set of programs that will limit or prevent the introduction and spread of diseases and prevent the contamination of production facilities. European Economic Community[EEC] initiatives aimed at reducing the risk of transmission of highly pathogenic diseases. Biosecurity procedures include documentation and training, operational standards for facility, personnel etc. Free range production and High risk Biosecurity operations were discussed.

Biosecurity

Biosecurity refers to those measures taken to prevent or control the introduction and spread of infectious agents to a flock. Such infectious agents, whether they cause clinical or subclinical disease, significantly reduce the productivity, profitability and long term financial viability of a poultry operation. Biosecurity is about managing risk to meet the objectives stated above. It is essential that a risk assessment be conducted for each enterprise to establish what level of risk exists in each phase of its operations and to identify and implement control measures appropriate to these levels of risk.

FREE-RANGE PRODUCTION OPERATIONS

This applies to caged, barn and free-range operations. It is recognised that free-range birds will potentially have

increased exposure to some avian pathogens. Diseases such as internal and external parasites, fowl cholera and Miliary Hepatitis (Spotty Liver) are more commonly recognised in laying poultry farmed under extensive conditions. While it is difficult to apply standard hygiene practices to free-range areas the basic biosecurity principles of preventing the introduction of disease by controlling movement of livestock, equipment and personnel still apply. The use of enhanced vaccination programs and strategic prophylactic medications are a useful tool to limit disease build up on free-range operations. Increased exposure to wild birds is considered a biosecurity risk and most importantly to waterfowl, particularly wild ducks belonging to the Order Anseriformes (includes the Wood duck, Chestnut Teal, Freckled duck, Black duck and Whistling duck). It is important for the free-range area not to have environmental and amenity factors that attract congregations of large numbers of wild birds or surface water for ducks. Wild water fowl surveillance identifies that most ducks have at some stage been exposed to avian influenza (AI) and more importantly at any one time a small percentage of these are shedding virus in their faeces that can contaminate surface water and pastures. Some AI of the H5 and H7 subtypes which have in the past caused EAD outbreaks in the egg industry. In all cases there was evidence of an association between wild ducks and contamination of drinking and/or cooling water or direct physical contact. Control programs that reduce and



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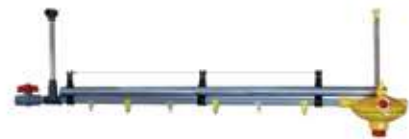
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Each producer must establish and document clear guidelines regarding the circumstances when an EAD alert should be raised (e.g. an unusual increase in mortality or drop in production), and who must be informed. The action plan must also clearly state that, if an alert is raised, movement of birds, eggs and egg products, disposables, equipment and personnel from (and onto) the suspect property must immediately cease and/or be strictly controlled. For other farms and properties which are close horizontal contacts, movements must have a risk-based assessment.

The frequency of monitoring of mortality and production variations is to be increased and enhanced across the operation including in contact properties.

eliminate the presence of wild waterfowl on free-range areas should be a priority consideration for all free-range operators. This will involve the absence, or elimination, of water catchments and other surface water within and in the vicinity of the free-range area, the netting of retention dams, the destruction of wild water fowl where and when legislation permits and the use of aversion programs. Good fencing is required around freerange farms to prevent entry of animals such as foxes. In many situations, however, fencing alone is insufficient to stop such intrusions; therefore, some free-range enterprises keep specially trained dogs or guard animals such as alpacas with the chickens to reduce predation by foxes and birds of prey.

HIGH RISK BIOSECURITY OPERATIONS

Objective: To enhance biosecurity protection by strategically assessing movements to protect the property from the increased threat of a disease being introduced from the outside in the face of a suspected outbreak of an emergency disease or a serious endemic disease.

1. Action plan for suspected Emergency Animal Disease [EAD]: It is imperative for all egg producers and handlers to be aware that there is potential for an EAD to occur at any time and thus producers must be proactive at ALL times to ensure biosecurity procedures are in place that will prohibit the entry into the poultry operation of an emergency or serious endemic disease. For an EAD, the level of biosecurity at all times must be optimal because the infection will occur before clinical signs are observed and thus there will be a period of potential "silent" spread prior to any industry awareness of the EAD. This is an important concept for all horizontal contacts (egg producers, transporters, clean out and vaccination crews) who are potential spreaders of an EAD while not aware of its presence. The preventive activity level should be of high awareness at all times and not just during a suspect EAD or after an outbreak notification.

- Each producer must establish and

document clear guidelines regarding the circumstances when an EAD alert should be raised (e.g. an unusual increase in mortality or drop in production), and who must be informed. The action plan must also clearly state that, if an alert is raised, movement of birds, eggs and egg products, disposables, equipment and personnel from (and onto) the suspect property must immediately cease and/or be strictly controlled. For other farms and properties which are close horizontal contacts, movements must have a risk-based assessment.

- The frequency of monitoring of mortality and production variations is to be increased and enhanced across the operation including in contact properties.

- Senior management or the operation's veterinarian must be immediately notified who will assess the situation to consider or rule out an EAD. The directions given regarding biosecurity, livestock and product movements must be strictly followed and all other relevant personnel made aware of them.

- In the event of a suspect EAD being notified the state Chief Veterinary Officer becomes the responsible entity with the legislative authority to implement livestock movement controls and enforced quarantine.

2. Standard Operating Procedures (SOPs): SOPs will be available for any specific outbreak of an EAD from Animal Health.

BIOSECURITY PROCEDURES

1. Documentation and training

Objective: To ensure awareness and training of all production area employees in all relevant biosecurity requirements.

- Each production facility must keep a copy of the Manual readily accessible to staff.

- Staff must be provided with training in the relevant parts of the Manual and such training is to be recorded.

2. Facility operational standards

Objective: To limit and control access to poultry production areas by vehicles and people, and prevent as much as possible



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access by livestock, wild birds and other animals (including rodents).

- The production area must have a perimeter fence establishing a clearly defined biosecurity zone.

- If livestock graze the property then the production area must have a stock proof fence. Grazing near sheds (i.e. on part of the production area as defined in this Manual) is only permitted where the grazing area is separated by a stock proof barrier from the area used by poultry, effectively preventing transmission of contaminants from grazing livestock to poultry, and the grazing area is not used for access to other parts of the production area. Drainage from livestock pastures or holding areas must not enter poultry enclosures or areas that can be accessed by poultry (e.g. through fences). In free-range egg operations where either dogs or alpacas are used to protect fowl in the range area from attack by foxes, feral dogs or birds of prey, these guard animals should be tested for freedom from salmonella by faecal microbiological culture prior to introduction and ideally re-tested annually.

- A sketch or map of the layout of the property, showing the production area, sheds, ranges, access roads and gates must be created and maintained and kept current. This must be readily accessible to all staff and visitors.

- The main entrance to the production area must be capable of being closed off to vehicle traffic (e.g. lockable gate which, where feasible, should be kept locked at all times) and must display appropriate signage including "Biosecure Area - No Entry Unless Authorised" or similar wording. In addition, signage must direct visitors to contact the producer before proceeding i.e. telephone number and/or enquire at house.

- There must be a parking area for vehicles not entering the production area. There must be a change area away from sheds with clean protective clothing and boots provided. Showering and changing into clean protective farm clothing is preferable, particularly for pullets that are susceptible to endemic poultry diseases

until they have completed their vaccination program.

- Entry to sheds must only be made through entrances where a footbath exists containing a suitable disinfectant used in accordance with company or manufacturer's instructions and changed regularly before the disinfectant deteriorates and loses effectiveness. There must be provision for scraping the soles of boots before dipping to ensure the sanitiser is making contact with the soles of the boots. Facilities for hand washing/sanitation must also be placed at the entry of each shed. In free-range operations similar foot bath procedures should apply for access to the production area to avoid the possible introduction of offsite pathogens. While footbaths provide a degree of security in regard to the incursion of pathogens into the production area it is preferable to have the policy that requires a change of footwear at the boundary of the shed/range area. Each shed/ production facility should have its own footwear to change into.

- Dead bird storage and disposal methods must conform to applicable hygienic containment and environmental compliance requirements.

- All poultry housing must be designed and maintained so as to prevent the entry of wild birds and limit the access of vermin as far as is practical. The control of wild birds has limitations in free-range operations.

- Free-range landscape – trees, shrubs and other range amenities should be selected to minimise the risk of attracting the types of wild birds that are a high biosecurity risk, particularly in free-range operations. The area around sheds must be kept free from debris and vegetation, and should be mown regularly to discourage wild birds, insects and rodents which are potential disease vectors. Vegetation buffers for environmental compliance should not be compromised. Trees may be used as shelter belts, along fence lines and on free-range premises to provide shade and provide poultry with some protection from unfavourable ambient conditions and

flying predators.

- Drainage – The production area should be adequately drained to prevent accumulation and stagnation of water likely to attract water fowl, especially in the areas around sheds and range areas. Standing water may also increase the presence of insects which can act as significant disease vectors. A range management plan should be implemented to manage pot-holes or water pooling after heavy rain falls.

- An appropriate vermin control strategy and plan must be developed and implemented, including rodents, foxes, and wild dogs and cats.

- A baiting program for rodents must be implemented where a risk assessment deems this necessary (live rodents, droppings, nests).

- Drinking water for poultry, as well as cooling water (fogging or cooling pads) used in poultry sheds, must meet appropriate water standards. Water that does not meet the standard must be effectively treated to ensure that the standard is met. All surface water (dam, river, channel, rainwater catchment, etc.) must be effectively treated and sanitised before being used as drinking, cleaning or cooling water for poultry.

Treated and sanitised water supply must be kept in a closed system from the point of treatment to its time of utilisation for drinking water or cooling.

- Only pullets and/or laying fowl are to be kept in the production area and no other avian species (including aviary birds and pet birds).

- While not a preferable practice, if more than one commercially produced avian species is kept in the production area, the species must be housed and managed separately, with suitable internal biosecurity arrangements for each species as well as the overall property boundary biosecurity for the entire site. Shared equipment must be cleaned and disinfected between uses. The risk of increased endemic disease should be considered as an increased risk assessment in such mixed operations. As domestic species of waterfowl can be asymptomatic carriers of AI, they should



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The Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) of the World Trade Organization (WTO), disciplines SPS measures in relation to international trade. The Codex Alimentarius Commission (Codex), the International Plant Protection Convention (IPPC) and OIE provide international standards for food safety, plant health, and animal health respectively.

never be housed on sites where other types of commercial poultry species are present.

- Feeding systems must, wherever possible, be closed to ensure that feed in silos and feed delivery systems are protected from access and contamination by wild birds and rodents. Feed spills outside the shed must be cleaned up without delay to prevent the attraction of wild birds and vermin.

- Where bird weighing is practised, it must be carried out using the production area's own weighing frames and scales. Company service personnel can use their own scales provided that they are cleaned and disinfected when moved between production areas.

3. Personnel standards and procedures

Objective: To minimise the risk of introducing or spreading a disease or contaminant through vehicle and/or people movement, including:

- Staff (including production, service and grading floor personnel)
- Contractors, suppliers and other service personnel
- Visitors and family members and
- To document such movements to facilitate tracing in case of a concern.

- Production personnel
Objective: To minimise the risk of introduction of disease or contaminants by production personnel.

4. Operational standards

5. Grading floor and egg processing specific additional biosecurity requirements

GLOBAL INITIATIVES ON BIOSECURITY

EEC commission decision (2005/734/EC) of Oct. 19, 2005 was adopted laying down Biosecurity measures to reduce the risk of transmission of highly pathogenic avian influenza caused by influenza A virus of subtype H5N1 from birds living in the wild to poultry and other captive birds and providing for an early detection system in areas at particular risk.

This decision was amended on 21 October 2005 by adding article (2a) re additional risk mitigating measures as follows:

a) The keeping of poultry in the open air is prohibited without undue delay; however, the competent authority may authorize the keeping of poultry in open air provided the poultry are provided with food and water indoors or under a shelter which sufficiently discourages the landing of wild birds and prevents contact by wild birds with the feed or water intended for poultry;

b) Outdoor water reservoirs required for animal welfare reasons for certain poultry are sufficiently screened against wild waterfowl;

c) The poultry is not provided with water from surface water reservoirs accessed by wild birds, unless such water was treated to ensure inactivation of possible virus;

d) The use of birds of the orders Anseriformes and Charadriiformes as decoy during bird-hunting is prohibited;

e) Members States shall ensure that the collection of poultry and other birds on markets, shows, exhibitions and cultural events is prohibited. Models to rationalize regulatory functions among secretors for improved effectiveness and efficiency have appeared.

The Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) of the World Trade Organization (WTO), disciplines SPS measures in relation to international trade. The Codex Alimentarius Commission (Codex), the International Plant Protection Convention (IPPC) and OIE provide international standards for food safety, plant health, and animal health respectively.

The Association of Southeast Asian Nations (ASEAN) held a meeting represented by their Agricultural and Health Ministers on Jan. 28, 2004 in Bangkok. Recognizing the potential serious impact of Avian Influenza (AI) on global public health, livestock production, trade and economic development, decided to:

a) Commit to more stringent surveillance and effective response systems, improved research and development capabilities, and



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sharing of information and technology;

b) Intensify national, regional and international efforts to tackle the outbreak of AI and future similar threats;

c) Implement domestic measures to control AI having regard to the recommendations of WTO, OIE, WHO, and FAO;

d) Work closely with OIE to strengthen guidelines on reporting and surveillance system;

e) Promote rapid, transparent and accurate exchange of scientific information to provide early warning of potential outbreak, and consider creating a regional veterinary surveillance network to link it with human health surveillance mechanisms;

f) Strengthen cooperation with regional and international organizations and joint research and development initiatives to reduce the hazards of epizootic outbreaks on human health, share best practices, devise counter measures, and develop effective, low-cost diagnostic test kits, vaccination and anti-viral drugs;

g) Call for assistance and exchange of expertise to assist affected countries to enhance their epidemiological and laboratory capacity for prompt detection, monitoring, surveillance and controlling of the disease;

h) Investigate options for designing more Biosecurity developments of the poultry sector for both small scale and commercial production.

ENFORCEMENT OF BIOSECURITY MEASURES

Having deliberated most literature on the subject of Biosecurity, one can accomplish the following:

a) Biosecurity is a relatively new concept. It has been emphasized in a meaningful way after the emergence of Avian Influenza in many parts of the world.

b) Biosecurity was, until the emergence of AI, used in conjunction with biosafety and bioterrorism and referred to measures to produce safe food for human consumption.

c) OIE has not dealt with the subject even

up to now except in joint meetings with FAO.

d) FAO started addressing Biosecurity recently but several years after the emergence of AI.

e) Had the highly pathogenic form of AI (HPAI) not hit the poultry industry hard and HPAI not affect humans by making certain of them ill or die, neither the United Nations, represented by FAO, nor governments would have resorted to Biosecurity actions and measures to reduce the spread of this disease or ultimately other poultry diseases as well.

f) Biosecurity measures, within the capacity of individual farmers or poultry companies, were implemented at varying degrees for a long time. These measures were taken in view of their economic benefits to such institutions. Benefits included avoidance of bacterial disease infections such as coryza, cholera, mycoplasmas, salmonellas, and reduction of exposure to viral diseases such as Newcastle and recently avian influenza. Even though the level of Biosecurity on any farm needs to be continuously upgraded and improved, certain Biosecurity measures cannot be imposed by individual farmers or poultry companies. Such issues need to be handled by authorities or governments.

It seems that governments, due to the complexities of issuing laws and acts, have so far not adopted certain Biosecurity measures that could certainly reduce disease transmission from one farm to another or from ranging birds to other ranging birds or commercial farms.

Therefore, in order to really reduce the risks of poultry disease transmission, particularly Avian Influenza, governments have to interfere by issuing acts and directives in the form of laws and enforce their implementation.

Conclusion

Avian Influenza (AI) is continuing to spread in the world, even though at a slower rate since the use of effective vaccines, especially in the countries where compensation is not possible and hence stamping-out fails, and where rural and backyard, non-vaccinated, poultry exists on

a large scale.

Biosecurity is a well proven means of checking the spread of this as well as other contagious poultry diseases. However, Biosecurity measures have so far, been implemented by farmers at their own consent and will. Mandatory Biosecurity measures may have been imposed in the context of biosafety and food security. Since AI is a threat to humans, and since the benefits of Biosecurity exceed avoidance of exposure to AI to improve poultry performance, enforcing Biosecurity measures on poultry farms and related facilities, such as hatcheries and slaughter houses, should be seriously considered and adopted by FAO and OIE.

In turn, FAO and OIE should persuade all governments of the world to adopt the same Biosecurity measures and enforce them by appropriate legislations and laws.

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Name Of Zone \ Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ajmer	490	491	482	472	458	457	458	458	450	440	433	433	418	420	423	426	426	420	405	395
Asansole	524	524	524	524	525	525	525	525	525	525	515	510	500	490	490	484	480	475	472	
Barwala	488	488	488	472	457	457	457	457	441	433	433	419	419	421	426	426	419	405	-	
Bengaluru (CC)	483	485	485	485	475	475	465	465	467	467	467	450	435	435	435	435	435	435	435	425
Brahmapur (OD)	482	484	486	488	488	485	485	485	485	485	475	471	461	461	461	457	447	447	447	
Burdwan (CC)	522	524	525	525	525	525	525	525	525	525	520	520	506	496	496	485	480	480	474	
Chennai (CC)	495	495	500	500	490	490	480	475	475	475	475	460	460	445	445	445	445	445	445	445
Chittoor	488	488	493	493	483	483	473	468	468	468	468	453	453	438	438	438	438	438	438	438
Delhi (CC)	512	512	512	512	512	500	485	485	485	475	475	460	455	450	450	450	450	450	450	435
E.Godavari	472	474	476	476	473	473	473	473	473	473	463	459	449	449	449	445	435	435	435	420
Hyderabad	464	466	466	466	450	440	440	442	442	432	432	415	405	405	405	405	408	408	395	395
Ludhiana	484	484	484	484	477	466	459	454	451	447	444	-	-	-	-	-	-	-	-	-
Midnapur (KOL)	522	524	525	525	525	525	525	525	525	525	525	520	520	506	496	496	485	480	480	474
Mumbai (CC)	517	519	521	521	521	521	505	495	497	497	487	487	487	470	460	460	460	465	465	465
Muzaffarpur (CC)	543	538	538	528	-	-	-	-	-	-	-	-	-	-	-	-	-	-	457	452
Mysuru	487	489	489	489	480	475	470	470	472	472	465	445	435	435	435	435	435	435	435	425
Nagpur	475	480	482	480	460	455	455	455	450	450	445	430	420	420	420	415	415	415	410	-
Namakkal	448	453	453	443	443	428	428	431	433	433	410	395	395	395	395	395	395	395	395	395
Patna	543	543	538	538	-	-	-	-	-	-	-	-	-	-	-	-	-	-	462	457
Pune	517	517	519	519	519	510	510	500	500	500	490	490	490	480	470	460	462	465	465	465
Ranchi (CC)	548	548	548	538	-	-	-	-	-	-	-	-	-	-	-	-	-	-	476	476
Vijayawada	472	474	476	476	473	473	473	473	473	473	463	459	449	449	449	445	435	435	435	420
Vizag	486	487	488	488	488	488	488	488	488	488	488	488	475	475	475	475	460	450	435	420
W.Godavari	472	474	476	476	473	473	473	473	473	473	463	459	449	449	449	445	435	435	435	420
Warangal	465	467	469	469	453	453	443	443	445	445	435	435	418	408	408	408	408	411	411	398

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ADVERTISEMENT INDEX

ALLANA	23	LUBING	91
ANSHUMAN INDUSTRIES	83	LUMIS	10
A.P POULTRY EQUIPMENT	119	MSD	71
ABT CORPORATION	72	NATURAL REMEDIES	29
ABTL	81	NEOSPAK	97
ALLTECH	37	NOVUS	1ST COVER
AVIAGEN	05	PERICOLI	19
AZRA'S POULTRY EQUIPMENTS	95	POLARIS	109
BERG & SCHMIDT	65	POULTRY INDIA	64
BLUE STAR	107	PROVET PHARMA	115
BV BIOCORP	73, 99	PROVIMI	49
CEVA POCHEM	41	QUADRAGEN	21
CHEMBOND	69	RIOTH	47
DHUMAL	39	RND AUTOMATION	103
DSM	61	SAIFE VETMED	55
EVONIK	57	SAI KRISHNA	111
FARMAKON	59	SRINIVASA FARMS	27
FRANCIS	117	SUPREME	79
GARINNO	75	THE HIMALAYA	15
GOLDEN GROUP	108	VAKSINDO	17
GLOBION	31	VAN AARSEN	13
GUYBRO	53	VESPER GROUP	43
HESTER	85	VET NEEDS	113
HUVEPHARMA	33	VETINA	25
I.B GROUP	14	VENTRI	3RD COVER
INDIAN HERBS	87	VENKY'S	67
INTERFACE PHARMA	2, 3, 4	VETINA	25
INTERHEAT	6, 7	VICTAM	45
INTRON	35	VOLSCHENDORF	101
JANAKI GROUP	105	ZEUS	77
KARAMSAR POULTRY EQUIPMENTS	89	ZOETIS	08
KAYPEEYES BIOTECH	93	ZYDUS	12
KEMIN	BACK COVER		



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