

Poultry Fortune

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February 2021

Annual Subscription: Rs 800 Foreign \$ 100

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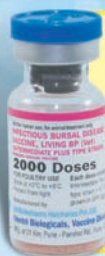
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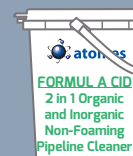
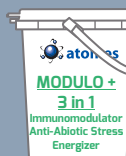
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Poultry Fortune

English Monthly Magazine
(Established in May 1991)

Volume 22 Number 7 February 2021

Editor & Publisher
M. A. Nazeer

Editorial & Business Office:
POULTRY FORTUNE
NRS Publications,
BG-4, Venkataramana Apartments,
11-4-634, A.C.Guards,
Hyderabad - 500 004, India.
Tel: 040 - 2330 3989, 70329 19554
E-mail: info@poultryfortune.com
Website: www.poultryfortune.com

Annual Subscription
India : Rs. 800
Foreign Countries : US \$ 100
or its equivalent.

Poultry Fortune will be sent to the subscribers in India by Book Post, and to foreign subscribers by AirMail.

Edited, printed, published and owned by M. A. Nazeer and published from BG-4, Venkataramana Apts., 11-4-634, A.C.Guards, Hyderabad - 500 004, India. Printed at Srinivasa Printers. Registered with Registrar of Newspapers for India with Regn. No. 72452/99. Postal Regn.No. RNP/HD/1067/2021-2023. Views and opinions expressed in the technical and non-technical articles/ news are of the authors and not of Poultry Fortune. Hence, we cannot accept any liability for any loss or damage arising from the use of the information / matter contained in this magazine.

- Editor



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Subscriptions for Poultry Fortune, English monthly, should be sent to:

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Bird flu is not something that has just dropped out of the Sky; I think people are being extremely sensitive these days because of Covid



Dear Readers,

The February 2021 issue of **Poultry Fortune** is in your hands.

In the News section you may find news about – After the jolt of COVID – 19 pandemic and unfounded scare

last year when chicken and egg prices crashed, then was triggered by unsubstantiated rumours about poultry products, especially chicken meat posing the risk of Covid-19, sales and businesses have again nosedived, this time over Avian Influenza, according to the observers of the poultry industry. An estimated 1.3 crore live broiler birds and 20 crore eggs on an average are sold daily in India, and these numbers can rise substantially during winter.

► As former CLFMA Chairman Amit Saraogi said, farmers are the backbone of our country and providing them with a sense of security should be the responsibility of the government. Animal husbandry farmers, especially poultry and aquaculture farmers, do not enjoy the same benefits as crop farmers. The livestock sector currently contributes 25.6% to the Agricultural GDP and 4.11% to the National GDP. It is essential to provide credit and insurance to the animal husbandry farmers as well so that the sector can reach its full potential. Non-Banking Financial Companies (NBFCs) and other financial entities should start providing credit loans to animal husbandry farmers as well. This will also encourage the farmers to invest more which will only contribute positively towards the growth of the country.

► Poultry farmers in different parts of India celebrated the 25th death anniversary of late Dr B. V. Rao, founder of NECC and Venkateshwara Hatcheries Group on 26 January 2021. National flag was hoisted on the occasion.

► Central Poultry Development Organization & Training Institute located at Hessarghatta, Bengaluru organized a one day Online Discussion Forum of pan India poultry training / education facilities. Poultry sector in India is a techno-commercial sector with contribution

of nearly 1.5 lakh crores to the GNP with about six (6) million people being employed directly or indirectly. Human resource development forms a significant backbone for the sector. However, keeping in pace with the growth of the sector the middle management and experts in specific areas of automation, management, soft skills etc. is the need of the hour.

► Rabobank expects overall demand in 2021 to be back to near-2019 levels. That will mean a 13% volume growth in 2021 compared to 2020. The analysts in their Global Animal Protein Outlook 2021 said that poultry production in 2021 in India is expected to return to near-2019 levels. In India, they see corn feed prices remaining bearish in 2021 with increased stocks due to reduced usage this year; this factor will help support production recovery in poultry sector.

► On February 1st, EW Nutrition concludes the acquisition of the Feed Quality and Pigment business from Novus International, including Novus's manufacturing plant in Spain.

► The Food Safety and Standards Authority of India (FSSAI) issued guidelines on safe handling and consumption of meat and eggs in the wake of the avian influenza. The regulator mentioned that the World Health Organisation (WHO) has stated it is safe to consume poultry meat and eggs and there is no epidemiological data to suggest the disease can be transmitted to humans through cooked food.

► Dr Shahid Jameel, a top Virologist and Director of the Trivedi School of Biosciences at Ashoka University, in an interview published in The Times of India dated January 17 answered to questions about the notion of Covid vaccine being given in India and of the Bird Flu outbreak in the country. Dr Shahid said that Bird flu keeps happening in winters. Actually between 2006 and 2015, India alone had 25 separate episodes of bird flu across 15 states. So it's not something that has just dropped out of the sky. I think we are being extremely sensitive these days because of Covid. So anything adds to the level of our anxiety. But the thing with Bird flu virus is that it infects humans very, very poorly. So, we don't really have to worry about it unless

Contd on next page



Poultry Fortune

Our Mission

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

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

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

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

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

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it's people who come into very close contact with infected birds. They have to be careful. And it is treatable, there are drugs for it.

► Vaksindo Animal Health, leading vaccine manufacturer of South-Asia opened its new office in Hyderabad. After one amazing year of solid foundation, Vaksindo India team moved to a 8,000 square-foot space with the latest technology for training, presentations and webinars. The new facility also has poultry health laboratory services planned by middle of 2021.

In the articles section – Article titled Biosecurity on Poultry Farm in India written by Kishore Gedam highlighted that in 2018, the Indian poultry market was valued at INR 1,750 billion and it is expected to reach INR 4,340 billion by 2024. Notable for its production of eggs, meat and employing rural people, poultry farming in India is growing every year. However, with the tremendous growth, the incidences of infectious disease outbreaks in poultry farms have also increased across different regions. To counter the challenge, biosecurity on poultry farms has received increased interest, especially over the past few decades.

► Article titled Never underestimate the importance of a healthy gut! written by Kurt Van de Mierop highlighted that the increasing genetic potential of our livestock and intensive production systems together with the clear and inevitable need to move away from anti-microbial growth promoters requires alternative strategies to support and maintain an optimal gut health for improved animal welfare and performance.

► Article titled Organic Poultry Farming in India written by Dr Krishna Chandra Sahoo highlighted that the poultry population of India grew at an exponential rate of 16.8% from 2012 to 2019 taking the number to 851.8 million last year. With changing consumer preference and increased health awareness, there has been a sudden shift of attention towards sustainable organic poultry farming in India. Poultry farmers in India are starting to realise how a small shift from conventional systems can benefit the animals, consumers and of course their business.

► Another Article titled Berberis lyceum (Indian Barberry): A Potential feed additive for poultry production written by M. T. Banday and other authors highlighted that Berberis lyceum is a medicinal plant known to possess immense pharmacological properties viz., antimicrobial, antioxidant, anti-diabetic, anti-diarrheal, anti-protozoal, hepatoprotective, anti-hyperlipidemic etc. Berberis lyceum can act as an alternate growth promoter due to ban on the use of antibiotics as growth promoters in poultry, by modifying the gut microbiology and stabilizing the health status of birds.

Readers are invited to send their views and comments on the news, special feature and articles published in the magazine which would be published under "Readers Column". Time to time, we shall try to update you on various aspects of Poultry sector. Keep reading the magazine regularly and update yourself. Wish you all fruitful results in your efforts.

M.A.Nazeer
Editor & Publisher
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Pre Budget Expectations 2021

Kolkata: "Farmers are the backbone of our country and providing them with a sense of security should be our responsibility. Animal husbandry farmers, especially poultry and aqua farmers, do not enjoy the same benefits as crop farmers. The livestock sector currently contributes 25.6% to the Agricultural GDP and 4.11% to the National GDP. It is essential to provide credit and insurance to the animal husbandry farmers as well so that the sector can reach its full potential. NBFCs and other financial entities should start providing credit loans to animal husbandry farmers as well. This will also encourage the farmers to invest more which will only contribute positively towards the growth of the country.

A minimum contract growing charge should also be fixed for the poultry sector so that farmers are not affected by the fluctuating market. This will also help in achieving our Hon'ble Prime Minister's vision of doubling the income of farmers by 2022.

The industry also seeks that the Government allows negligible import duty on capital goods and plant equipment required to manufacture floating fish feed and shrimp feed as most of these equipments are not available in India", said Mr Amit Saraogi, Managing Director, Anmol Feeds.

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**Amit Saraogi,
MD, Anmol Feeds Pvt Ltd**

nearly two decades ago, Anmol Feeds Pvt Ltd has been focused on high quality livestock feed since the start of their journey, steadily expanding its production capabilities and helping farmers yield high returns. At present, Anmol Feeds has eight successfully running state-of-the-art superior manufacturing plants across six states - Uttar Pradesh, Bihar, West Bengal, Jammu & Kashmir, Jharkhand and Haryana. With a cumulative production capacity of 1300 MT per day, the pioneers of pellet feed for Indian farmers, Anmol Feeds, has been catering to the livestock feed requirements of 20 states across India working with more than 50,000 farmer families and 1,000 employees. The Rs. 530 crore company launched its products under the umbrella brand Nouriture last year to meet the growing challenge of quality feeds in the market and introduced their floating fish and shrimp feed into the market.

Budget Reaction

"Budget 2021 was indeed one of the most awaited announcement in recent times as it became evident as a harbinger for the revival of the economy. Union Budget 2021 has been a holistic, progressive and planned one that aims to take India forward towards a new socio-economic resurgence over the next decade.

The Financial bill encompasses equitable and appropriate attention to the vital pillars of development such as healthcare, education, physical and financial capital, agriculture, infrastructure, inclusive development for aspirational India, reinvigorating human capital, innovation and R&D. The focus on the agriculture sector as expected has been satisfactory with key action points such as 1,000 more agricultural mandis integrated with e-National Agriculture Market being proposed. the rising government spending for purchasing grains and pulses at support prices, with an aim to further strengthen the state-regulated markets, or APMCs is noteworthy.

Government's Agricultural credit target attuned to INR 16.5 lakh crores in FY22 is a welcome move. This will also encourage the farmers to invest more which will only contribute positively towards the growth of the country. Focus on ensuring increased credit flows to animal husbandry, dairy,

and fisheries is something we had been advocating. The budget had nothing specific related to animal husbandry.

MSP should have also been fixed for the poultry industry so that farmers did not get affected by the fluctuating market. Increasing allocation to the Rural Development Fund is a constructive move towards boosting of the rural economy and increasing employment opportunities.

Development of modern fishing harbours and fish landing centres, along the banks of rivers and waterways will further bolster the fisheries sector which holds tremendous potential. We also welcome the increase in duty in fish and shrimp feed. Hon'ble Finance Minister has rightly put forth the need to improve agricultural infrastructure in the country in order to boost output of the sector. For seamless supply chain and logistics, the focus on rail and road infrastructure especially, freight corridors will enhance competitiveness of Indian agriculture sector by lowering the cost of transportation and better connectivity between production and consumption markets, not just domestic but also globally. Overall the budget leaves room for optimism but left the poultry sector in a lurch" said Mr Amit Saraogi, Managing Director of Kolkata based Anmol Feeds Pvt Ltd.

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PREVENTION WORKS



New breed of entrepreneurs can propel India's poultry sector

Bangalore: India's government has been rolling out initiatives to breathe new life into the poultry sector by attracting entrepreneurs and women's cooperatives to invest in it.

"We see the broiler sector growing 8-10% every year and the layer sector growing at 4-6%. But we need more people to come in and it should be sustainable," told Mahesh P. S., Director of the Central Poultry Development

Organization and Training Institute, a research agency under the Ministry of Fisheries, Animal Husbandry and Dairying.

In a country as big and diverse as India, Dr Mahesh said a number of poultry models could work. These may include contract grower models to cooperatives of female farmers.

He also hoped that by providing a platform for poultry entrepreneurs to recount their success



Dr P. S. Mahesh,
Director, CPDO & TI

stories, more farmers would be encouraged to follow their path, especially after a disastrous year in 2020.

Last October, Mr Mahesh's institute presented a five-day online seminar covering poultry investment. Poultry-sector entrepreneurs were invited to discuss their approach to poultry farming.

Dr Mahesh said India's poultry sector needs to ready itself for an increase in protein demand.

To do so, it requires entrepreneurs who are willing to start off as traders and climb their way up the ladder before eventually owning their own farms.

"Once they know what the market needs, they can grow it," he said.

This is in line with the government's program to encourage farmers to have more control within their own regional markets. Exposing them to trade, the government believes that it will make the farmers think like entrepreneurs more than farmers.

Bird Flu is treatable; we don't really have to worry about it



Dr Shahid Jameel, Indian Virologist and Director, Trivedi School of Biosciences at Ashoka University

Dr Shahid Jameel, in an interview published in The Times of India dated January 17 answered to questions about the notion of Covid vaccine being given in India and of the Bird Flu outbreak in the country.

Vaccines are safe but we don't know how effective they are as we don't have data, says virologist Shahid Jameel. As the much-awaited Covid vaccine rollout happens in the country, **Rema Nagarajan** speaks to **Shahid Jameel**, a top virologist and Director of the Trivedi School of Biosciences at Ashoka University, about the notion of 'desi' vaccines and the need for transparency when it comes to trial data.

As a virologist, what is your assessment of the bird flu outbreak?

Shahid Jameel: Bird flu keeps happening in winters. Actually between

2006 and 2015, India alone had 25 separate episodes of bird flu across 15 states. So it's not something that has just dropped out of the sky. I think we are being extremely sensitive these days because of Covid. So anything adds to the level of our anxiety. But the

thing with Bird flu virus is that it infects humans very, very poorly. So, we don't really have to worry about it unless it's people who come into very close contact with infected birds. They have to be careful. And it is treatable, there are drugs for it.

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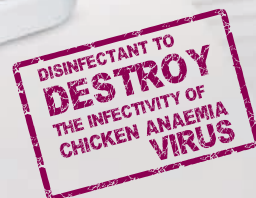
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Warangal Poultry Farmers celebrate Dr B. V. Rao's 25th Death Anniversary



A view of Dharma Rao, Errabelli Pradeep Rao and others at NECC office in Warangal, Telangana.

26 January 2021, Warangal:

The 25th death anniversary of late Dr B. V. Rao, Father of poultry farming in India was held at NECC Office, B. V. Rao Bhavan, Hunter Road, Hanamkonda on January 26, presided over by Mr Errabelli Pradeep Rao, Zonal Chairman, NECC.

On the occasion of Republic Day, Warangal Poultry Farmers Association President Mr M. Dharma Rao unfurled the national flag on the office.

At the meeting that followed, Mr Errabelli Pradeep Rao said that it was Rao who had brought the limited number of

backyard chickens to the industry level and directly and indirectly provided employment to lakhs of people. If we are united we can achieve anything, so we all should carry forward B. V. Rao's aims.

Association President Mr M. Dharma Rao said that before recovering from the Corona losses, a lightning strike in the form of Bird flu hit the poultry farmers. The farmers are being severely affected by this. He said the state government should bring the status of the poultry industry to the notice of the central government and seek appropriate assistance. At



the time of Corona, the per capita egg consumption in the country was 68 while the per capita consumption in our state was 168.

Association Vice Presidents Mr T. Shyam Sundar Rao, Mr G. Ramana Reddy, Principal Secretary Ch. Prabhakar Reddy, Treasurer Mr M. Ram Prasad, NECC Local Vice Chairman Mr B. Srinivas Reddy, Association Advisor Mr A. Ram Chander Rao, EC Member Mr A. Chandrayya remembered the services done by B. V. Rao to the poultry industry.

Mr Devender Reddy, Mr P. Rama Rao, Mr P. Gandhi, Mr K. Rajeshwar Rao, Mr N. Venu Rao, Mr Samma Yadav, Mr



Rajender, Mr Moin Pasha, Mr B. Venkateswara Rao, Mr Narendar, Dr Krishna Murthy and other poultry farmers participated in this occasion. Afterwards, free distribution of boiled eggs was held in the memory of B. V. Rao in the town.

P. Srinivas, Market Surveyor, NECC Warangal Zone. Y. Raju, Office Incharge, Poultry Farmers Association.



Farmers took up free distribution of boiled eggs

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Courtesy: NECC

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2010

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2010

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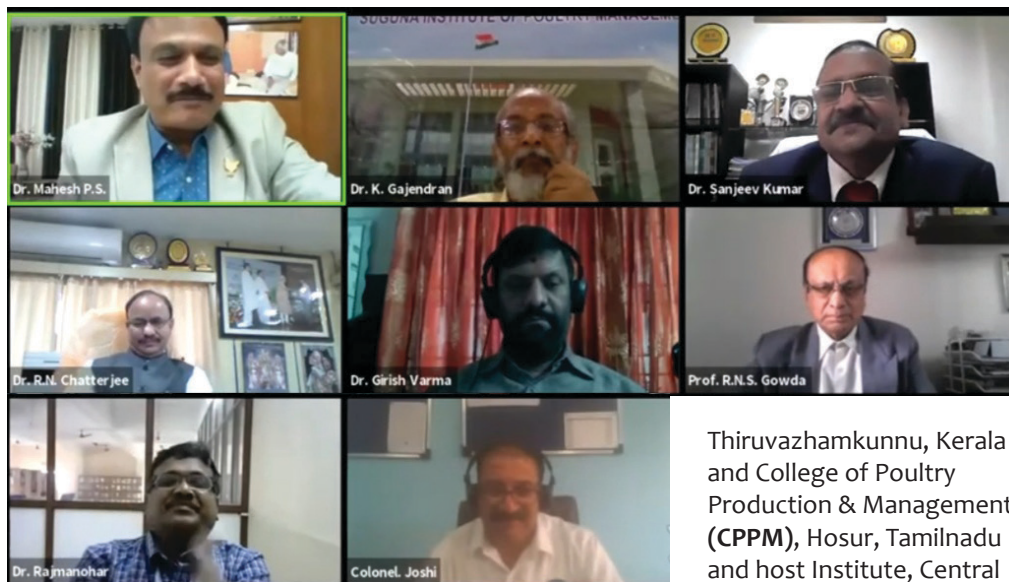
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CPDO & TI organises one day online training on Poultry, Education facilities



Panelists

Bangalore: Central Poultry Development Organization & Training Institute under Government of India, Ministry of Fisheries, Animal Husbandry & Dairying, a premier Institute located at Hessarghatta, Bengaluru organized a **one day Online Discussion Forum (ODF) - of pan India Poultry training / education facilities.**

Poultry sector in India is a techno-commercial sector with contribution of nearly 1.5 lakh crores to the GNP with about 6 million people being employed directly or indirectly. Human resource development forms a significant backbone for the sector which well acknowledges that there are good number of technocrats / specialists along with work force in the sector. However, keeping in pace with the growth of the sector the

middle management and experts in specific areas of automation, management, soft skills etc. is the need of the hour.

CPDO & TI the premier poultry training institute in the country took lead in organizing pan-India ODF of poultry training / education facilities across the country. In this forum, Dr Sanjeev Kumar, Director, ICAR - Central Avian Research Institute (**ICAR - CARI**), Izatnagar, U.P., Dr R. N. Chatterjee, Director, ICAR - Directorate of Poultry Research (**ICAR - DPR**), Hyderabad, Colonel. Joshi, GM & Head, Dr B. V. Rao Institute of Poultry Management & Technology (**IPMT**), Pune, Dr K. Gajendran, Principal, Suguna Institute of Poultry Management (**SIPM**), Udumalpet, Tamilnadu, Dr Girish Varma, Dean, College of Avian Science & Management (**CASM**),

Thiruvazhamkundu, Kerala and College of Poultry Production & Management (**CPPM**), Hosur, Tamilnadu and host Institute, Central Poultry Development Organisation & Training Institute (**CPDO & TI**), Hessarghatta, Bengaluru deliberated about facilities in general and training activities in particular during the day.

Dr Mahesh P.S., Joint Commissioner, GoI & Director welcomed all the panelists for the discussion forum. **Prof. R. N. S. Gowda**, former Vice chancellor, KVAFSU and poultry expert inaugurated the event and stressed the need for coordination, collaboration and remodeling of courses at all Institutes and educational facilities suiting to safe food and biosecurity in the farms. Further, Prof. felt that such an initiative of establishing one platform for training / educational facilities is highly needed and appreciated the initiative by CPDO & TI along with other institutes. He also felt that during this digital era of post

covid virtual platforms like this made easy for all the panelists to join and to create a historic record in **youtube channel** of **CPDO & TI** and **Hibiz TV** for future reference to the needy.

Dr Sanjeev Kumar, Director, ICAR - CARI elaborated in detail about the facilities available at the Institute. CARI is the only Institute mandated for research in alternate species including chicken namely, Duck, Quail, Guinea Fowl, Turkey etc. CARI was established in 1979 with a mandate of research and human resource capacity building. CARI is the premier institute offering masters and PhD programs in the specific field of poultry specializations. He further narrated about various breeds of poultry released by CARI across the country. They conduct lot of training programmes namely, short term training programme of 6-days, sponsored training programmes, specialized training programs (12 days), EDP programme (6 days) and International short courses (one week). For more details one can reach CARI through website: <https://icar.org.in/cari/> CARI has all the facilities for conducting research and trials in different departments of poultry science. CARI has established a new campus in 2020.

Dr R. N. Chatterjee, Director, ICAR - DPR, Hyderabad presented a detail status of Directorate of Poultry Research which was established as a full-fledged unit during 1988 at Hyderabad. This Institute is mandated for research in molecular genetics,



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nutrition and physiology. DPR has a network of AICRP centers across the country and poultry seed projects in different states. The main mandate has been production and supply of parent stocks, day old chicks, hatching eggs across the nation and popularizing coloured variety of birds for rural poultry. They have a huge setup at Hyderabad with latest facilities. The details of all the presentations can be heard in our youtube channel CPDO&TI TRAINING and facebook: cpdoti.bangalore. DPR conducts need based training programmes for farmers, researches and academicians. DPR can be reached through website: www.pdonpoultry.org

Colonel. Joshi, GM and Head, Dr B. V. Rao Institute of Poultry Management & Technology, Pune which was established as a trust in 1987 at Uralikanchan near Pune under the group network of Venkateshwara

Hatcheries Group. They offer different courses namely Basic Poultry Management Course for beginners (16 weeks), orientation course for poultry farmers (8 weeks) Advance Poultry Management Course for entrepreneurs or owners (48 weeks), specialized course (4 weeks) and second generation entrepreneur course (8 weeks). IPMT offers lot of facilities namely, broiler farms, layer farms, feed processing section, supporting the training. IPMT has field visits and hands-on experience in their breeding farms, processing units, Labs etc. They have a placement cell for trainees / entrepreneurs to be employed. IPMT can be reached at: www.venkys.com/ipmt

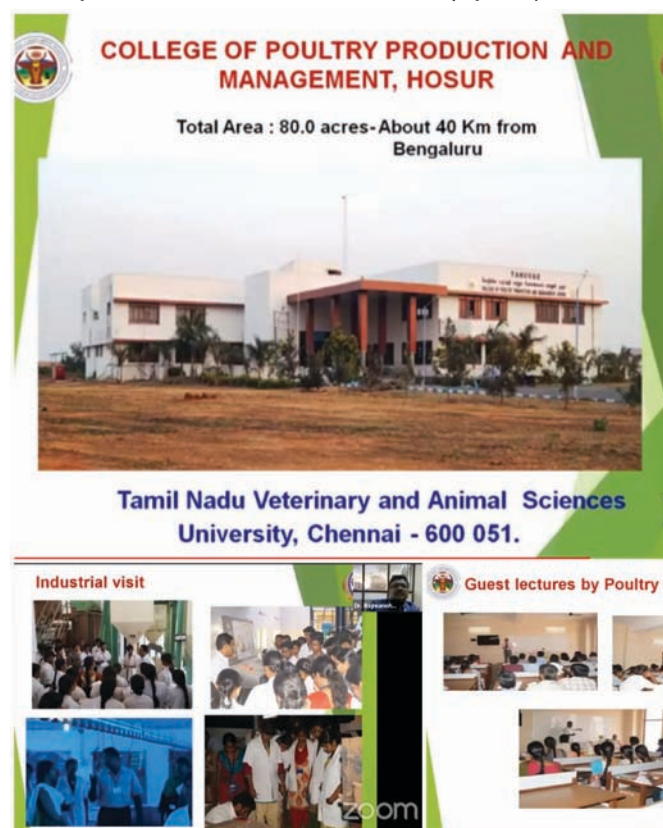
Dr K. Gajendran, along with **Dr Kumaran** briefed the activities of Suguna Institute of Poultry Management located at Udumalpet near

Coimbatore which was established in 2012. This Institute offers B.Sc., Poultry Science, a three years degree programme (6 semesters), Diploma in Commercial Broiler Production, one year (2 semesters), Diploma in Poultry Health one year (2 semesters). They have tie-up with Alagappa University, Coimbatore. They instructional forms for broilers, layers, breeders and instructional units, feed mills, processing plants etc. for the students. Their curriculum is designed to have 60% practicals and 40% theory with an objective to create expert manpower. They can be reached at www.sugunainstitute.com. They offer courses for the students across pan India.

Dr Girish Varma, Dean, CASM, Tiruvazhamkunnu, near Palakkad, Kerala which was established in 2015, they offer B.Sc., Poultry Production and

Management. They have 6 departments in the college. The campus is located at a backdrop of western ghats with lots of green atmosphere. The students can have practical exposure at various units of broiler, layer, duck unit, quail unit etc. The students are well groomed for communication skills, business skills, leadership qualities during the studies. The college also offers international programmes in collaboration with ICAR and ASCI. They can be reached at www.kvasu.ac.in/college

Dr Shamsudeen along with **Dr Raj Manohar** presented about the College of Poultry Production & Management located at Hosur, Tamilnadu, which was established during 2011 offering undergraduate programme (B.Tech) in poultry technology of 4 years duration and PG M.Tech (2 years) which



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was started in 2019-20. The mandate of the college is to produce technocrats with sound skills in poultry management, processing and technology. They can be reached at **www.tanuvas.ac.in/cppmhosur**

Concludingly, **Dr Mahesh P.S.**, Joint Commissioner & Director, CPDO & TI presented about facilities of production and training at CPDO & TI. He elaborated that the campus is the largest in the country in government sector with 100 acres spread out area established during 1972. Poultry unit with 12 sheds automated, Duck unit and Turkey unit are established with high standards of biosecurity. The training institute offers various short term (one week), long term (6 weeks) programmes for the trainees across India and foreign nationals. Apart from this CPDO & TI conducts entrepreneurs

programs in collaboration with Veterinary Colleges, KVKs in the southern states. CPDO & TI has taken a new initiative post COVID to organize online training programmes namely, Entrepreneurship in poultry Awareness Week (EPAW), Entrepreneurs Day (ED) and Online Discussion Forum (ODF) for the benefit of trainees across the country. The programme is conducted live in zoom and youtube channel of CPDO&TI along with recordings available in facebook and on youtube. CPDO & TI can be reached at www.cpdoti.org

Dr Mahesh P.S. briefed about opportunities for the poultry startups at **NAAVIC**, the **agri-incubation centre** established at National Institute of Veterinary Epidemiology and Disease Investigation (NIVEDI), Bengaluru offering grant-in-aid upto **5 lakhs and 25 lakhs** for the idea at



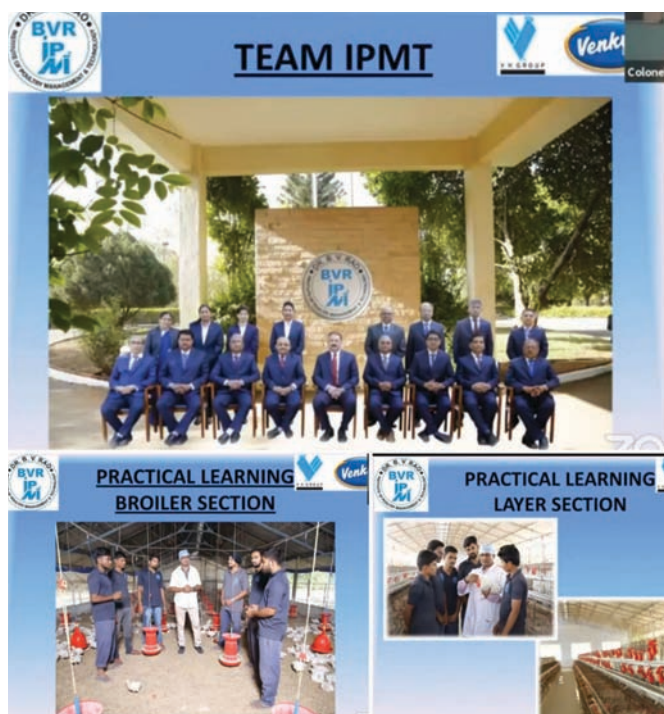
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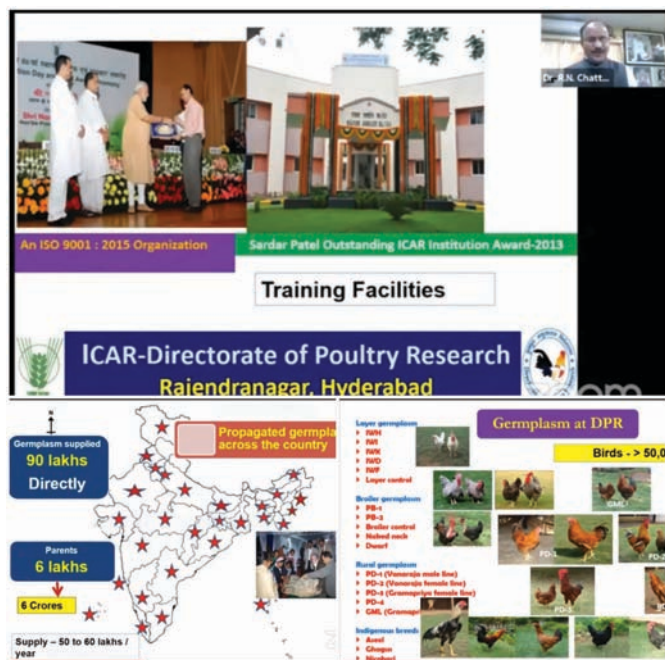


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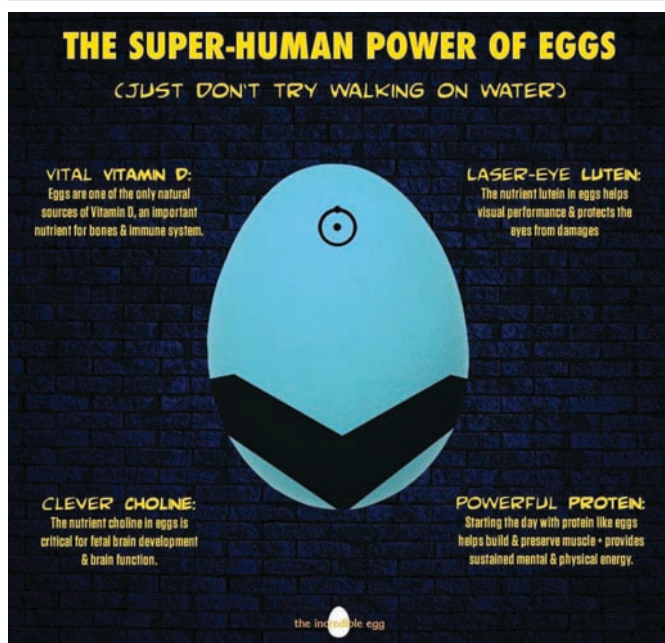
ICAR - DPR

preseed stage and seed stage funding respectively. They can be reached at www.nivedi.res.in

Mr Anwar Basha, Senior faculty of CPDO & TI executed the job of admin of conducting Discussion Forum very effectively. The other team members of CPDO & TI worked hard in making this programme successful. The entire programme was live broadcasted on CPDO&TI Youtube: CPDO&TI

TRAINING for the first time. All the recordings of panelists and speakers are uploaded on the same day as a ready reference in the Facebook and Youtube channels.

All these recordings are uploaded on our Facebook page <https://www.facebook.com/cpdoti.bangalore> and official Youtube channel **CPDO&TI TRAINING**. All are requested to subscribe the channel.



Meat of fighter roosters sells at Rs 7,000 / kg in Andhra Pradesh

Vijayawada, January 16:

Cashing in on the huge demand for meat of roosters, locally known as Kosa, that sustain injuries or die during the Sankranti cockfights, their prices have touched ₹5,000 to ₹7,000 per kg. Sankranti gamecocks are nurtured carefully with heavy diets throughout the year to help them gain immunity and power.

in some quarters, Kosa curries are served with pride to the newlywed sons-in-law during Sankranti.

A rooster trainer, R. Venkatraju, said that roosters are fed with cashew, almonds, eggs, mutton and other high-power diets. He said that roosters undergo training in swimming and are made to perform other exercises



Meat as trophy: Enthusiasts of the 'sport' compete with one another to grab the flesh and enjoy the rooster's meat, which has a unique taste.

Enthusiasts of the 'sport' compete with one another to grab the flesh and enjoy the rooster's meat, which has a unique taste.

According to cockfight competition rules, the owner of the rooster that wins a fight also owns the dead 'competitor'. The owner auctions the dead rooster instantly. As soon as a gamecock is dead, all its feathers are removed; the bird is grilled and handed over to the one making the best bid. Kosas are free from fat has tremendous demand with people willing to part with an extra buck to get the flesh.

Incidentally, as a matter of an established tradition

to boost their stamina. He said that they are priced between ₹50,000 and ₹2 lakh depending on their robustness and fighting skills. He said that Kosa meat is luscious, which is the reason many are willing to pay higher prices and also for the fact that it is available only once in a year.

K. Venkateswara Rao, a fan of Kosa meat, said that a group of people like him went to arenas in Krishna, East and West Godavari districts and brought the flesh fresh off the block. He said that people who taste Kosa dishes would crave for it and do not mind the cost, according to a report published in Deccan Chronicle.

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Mor%	CFCR	DAILY GAIN	EPEF
2.44%	1.287	72.44 gms	508.4

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Vaksindo Team Celebrates Opening of its New Office



B. Ranga Rao and Mrs Madhavi B.
inaugurating Vaksindo Office in Hyderabad

Vaksindo Animal Health, leading vaccine manufacturer of South-Asia opened its new office in Hyderabad.

The soft launch at Vaksindo Animal Health building was inaugurated by Director / Head of Business, Mr B. Ranga Rao on Monday, 28th December 2020.

The Grand Opening Celebration began with a ribbon cutting ceremony by B. Ranga Rao and Mrs Madhavi B. graciously. The grand opening was followed by an auspicious diya ceremony in the flower decorated reception area.

Mini ribbon cutting ceremony for opening of new office areas by Dr Ganesh Darban continued with applause.

The opening ceremony was marked by the presence of all India Vaksindo's sales and services team and, the channel partners of Andhra Pradesh and Telengana State.

After one amazing year of solid foundation, Vaksindo India team moved to a new

and bigger office space in Hyderabad. The beautiful 8000 square-foot space will allow the Vaksindo to grow leaps and bounds in coming years with two meeting rooms and a large boardroom with the latest technology for training, presentations and webinars. The new facility also has poultry health laboratory services planned by middle of 2021.

Japfa India, Feed division team members enjoyed an intellectual conversation and the brainstorming ideas of increasing innovation and visibility of Vaksindo.

The Vaksindo India team radiated joy and success as Director B. Ranga Rao made an informative presentation on the company's core values and growth. "Vaksindo entered India with strong purpose of serving poultry farmers while networking, empowering them with innovative solutions" said Director B. Ranga Rao. "Our new laboratory facility in Hyderabad will

help us to better serve our customers in India" said Dr Ganesh Darban, Technical services manager.

To make the event even more special, mementos were presented by Director B. Ranga Rao to Vaksindo India team members.

It was a day dedicated to celebrating Vaksindo achievements not just in terms of services, but also in terms of the professional relationships that have been successfully nurtured.

Vaksindo is biotech subsidiary of PT. Japfa. Vaksindo was established in year 1983 in-collaboration with Nisseikan, Japan. Vaksindo is pioneer research-based poultry vaccine manufacturer in Indonesia.

Vaksindo complies highest quality standards of OIE, PH. Eur., IP and USP for vaccine manufacturing. Vaksindo contributes to the field of poultry health work by continuous, comprehensive, and updated research towards local endemic diseases in Asia and Africa like ND, IB & AI.

Vaksindo has dedicated manufacturing facilities for vaccine categories and, has BSL-3 facility for Avian Influenza vaccine.

Today, amid the covid-19 unlock, Vaksindo launched new vaccine solutions to



Dr Ganesh Darban

emerging and re-emerging poultry disease challenges. The following products are available in India:

- 1) VAKSIMUNE Coryza LE : tetravalent WOW vaccine for Infectious Coryza
- 2) VAKSIMUNE NDHV IB : Ulster strain of NDV with H120 strain of IB, live vaccine
- 3) VAKSIMUNE NDL Inaktif: Genotype VII pure NDV inactivated vaccine
- 4) VAKSIMUNE NDL Inaktif 0.1 : Genotype VII pure NDV inactivated vaccine in broilers
- 5) VAKSIMUNE NDL IBplus : Genotype VII NDV with 3 IBV serotypes – M41, 771 & QX-like strain.
- 6) VAKSIMUNE NDL IBplus EDS : Genotype VII NDV with 3 IBV serotypes – M41, 771 & QX-like strain; EDS-76 strain

Many more innovative research-based products are in pipeline and would be launched in year 2021.

>>



Vaksindo India Team

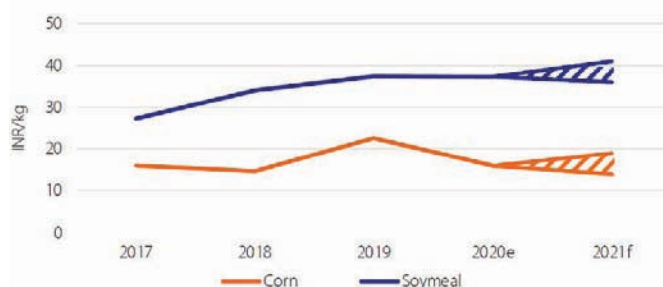
Rabobank: India's poultry industry set to recover in 2021 after recent setbacks

Netherlands, 20 November 2020: Poultry production in 2021 in India is expected to return to near-2019 levels, said the analysts in their Global Animal Protein Outlook 2021.

2019 levels. That will mean a 13% volume growth in 2021 compared to 2020.

B2B demand recovery will be a key determinant of the pace of recovery, said the

Corn feed prices expected to remain bearish in 2021



In India, they see corn feed prices remaining bearish in 2021, with increased stocks due to reduced usage this year; this factor will help support production recovery in the poultry sector.

Demand is expected to move in an upward trajectory, after a tough year in 2020. Rabobank expects overall demand in 2021 to be back to near-

analysts.

“Consumer retail demand (70% share of total) for broilers is expected to improve in 2021, while B2B demand (30% share) will still take time to return to normal levels,” they forecast.

The analysts see a transition from informal (wet) to a formal poultry market segment, along with consolidation and

integration of the industry. The formal poultry market segment is expected to gain share at the expense of wet market, due to increasing consumer concerns over quality, along with the increasing adoption of modern retail / e-commerce and online deliveries.

commercial farms. This will also lead to consolidation in the industry. Larger companies will look to integrate the business, with a focus on breeding and feed manufacturing in the upstream parts of the chain, while strengthening the retail distribution network in the

Poultry production in 2021 expected to be at near-2019 levels



Investments in feed, capacity expansion

Integrators will benefit, with investments in capacity expansion, feed manufacturing, and downstream distribution, said Rabobank.

“Integrators will gain share, due to expectations of a slow and partial recovery of small

downstream parts of the chain.”

We will continue to report on what Rabobank sees as the likely trajectory for various markets in its Global Animal Protein Outlook 2021 throughout the next week.

Courtesy / Source: Feed Navigator

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>> Vaksindo Animal Health Pvt Ltd, is poultry vaccine product and services company and, is subsidiary of PT. Vaksindo Satwa Nusantara, Bogor, Indonesia.

Vaksindo maintains vision to be trusted and preferred partner of poultry farmers in South Asia.

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Cockfight organisers face court charges

Organisers of cockfights face contempt of court charges in Andhra Pradesh

Kakinada, January 16:

Animal lovers are set to file contempt of court cases against all those involved in organising the banned cockfights during Sankranti and also expose the failure of the government in curbing cockfights and other gambling games.

Towards this, they are gathering videos and photographs of the cockfights to substantiate their arguments in court. Though Section 144 is in force, the police could not control the crowds. They did not book cases against the organisers or people who participated in the games.

Animal Rescue Organization (ARO) secretary Gopal R. Surabathula said that the High Court had clearly directed the collectors and superintendents of police of West Godavari, East Godavari, Krishna and Guntur districts to constitute joint inspection teams for each mandal, consisting of a police officer not below the rank of sub-inspector, tahsildar, and a representative of either the Animal Welfare Board of India or a member of a non-governmental organisation espousing the cause of animals or persons involved in the prevention of cruelty to animals.

He said that the officials on being informed of the places where such playgrounds and cockpits have been formed shall take immediate action



Animal lovers are gathering videos and photographs of the cockfights to substantiate their arguments in court

to ensure that such playgrounds are not utilized for conducting cockfights, if needed, by exercising powers under section 144 CrPC. He said that during Sankranti this year, too, torture and cruelty towards birds were unabated and the authorities could not take steps to curb cockfights nor did they take action against bookies and punters.

Despite the rule of establishing a wing of the Society for the Prevention of Cruelty to Animals (SPCA) in all the districts, not a single SPCA has been constituted in the state, he said. He wondered why no action was taken during the three-day festival, and there was none to stop political leaders from inaugurating cockfights.

Superintendent of police of East Godavari Adnan Nayeem Asmi said that 1,014 persons were arrested, 452 cases registered and 875 cocks, 3,029 knives and ₹4,44,310 cash were seized. He said that all steps were taken to curb cockfights and other gambling games, according to a report published in Deccan Chronicle.

High alert on Telangana borders to prevent bird flu, all bird samples negative

Hyderabad: No bird flu has been reported in the state. Health Minister Eatala Rajender and animal husbandry minister Talasani Srinivas Yadav on January 12 said that no cases of bird flu transmission to people have been recorded till now.

1,000 samples were screened in the last three days after chickens died in a few districts, but the reports came negative. There were no signs of bird flu in the state and all measures were being taken to monitor the unusual death of migratory birds and chickens.

According to the ministers, forest and animal husbandry department officials have been put on high alert. V. Lakshma Reddy, animal husbandry director told the Times of India, "We are not importing chicken. A high alert has been sounded and strict surveillance is being maintained to see the entry of birds from neighbouring states at Telangana state

borders. Due to fear of bird flu, traders of border areas have stopped bringing chicken from other states into Telangana."

Instructions have been issued to isolate sick birds and send their serum for testing. Reddy added, "In case of suspicious or unusual deaths, samples are being sent for testing."

Telangana has set up 1,300 rapid response teams as part of the steps to tackle any outbreak of bird flu. Officials of animal husbandry, irrigation, forest and health departments were coordinating with district collectors of the border districts.

Following the outbreak of bird flu in neighbouring Kerala, the Tamil Nadu government has set up a panel to check the impact and death of birds in the state, animal husbandry minister Udumalai K. Radhakrishnan said on January 12.

Courtesy: Times Now

Chicken Builds Muscle

Chicken is a source of high-quality dietary protein. 30 grams of protein per meal could benefit muscle growth

Vencobb
FRESH CHICKEN

© All India Poultry Development and Services Pvt Ltd - Hyderabad

Courtesy: Vencobb

Bird flu scare: FSSAI issues guidelines for safe consumption of meat, eggs

New Delhi: The Food Safety and Standards Authority of India (FSSAI) issued guidelines on safe handling and consumption of meat and poultry eggs in the wake of the avian influenza.

Amid the bird flu scare across the nation, Food Safety and Standards Authority of India (FSSAI) on 21 January 2021, Thursday advised people not to eat half-boiled eggs and undercooked chicken, and ensure proper cooking of poultry meat as it came out with a detailed set of guidelines. FSSAI has also urged consumers and Food Business Operators (FBOs) "not to panic" and ensure proper handling and cooking of poultry meat and eggs for safe consumption.

The regulator mentioned that the World Health Organisation (WHO) has stated it is safe to consume poultry meat and eggs and there is no epidemiological data to suggest the disease can be transmitted to humans through cooked food.

According to the regulator, bird flu is an infection caused by the avian influenza virus. These flu viruses occur naturally among birds. Wild birds worldwide carry the viruses in the intestines, but usually do not get sick from them. However, bird flu is very contagious among birds and can make some domesticated birds, including chicken and ducks, very sick and kill them.



Bird Flu: Proper cooking inactivates the virus in poultry says FSSAI

According to reports by experts, bird flu in India has been spread mainly due to the migratory birds coming into the country during winter months between September and March.

The release by the Food Safety and Standards Authority of India also mentioned that most strains of avian influenza virus are mainly found in the respiratory and gastrointestinal tracts of infected birds, and not on meat. It further said, "Highly pathogenic viruses, such as the H5N1 strain, spread virtually to all part of the infected bird, including meat."

"Proper cooking inactivates the virus present inside the meat and eggs. Poultry meat and eggs from areas with outbreaks in poultry should not be consumed raw or partially cooked," the FSSAI said. However, to date, no evidence indicates that anyone has been infected following the consumption of properly cooked poultry or poultry products, even if these

foods were contaminated with the avian influenza virus, it noted.

Suggesting major "dos and don'ts", the FSSAI advised that people handling raw meat should wear gloves, masks and wash their hands properly with water and soap, especially before and after handling the raw poultry and eggs. It further said that contact should be avoided with bird droppings. As per the guidelines, all surfaces and utensils that have been in contact with the raw meat should be washed and disinfected.

FSSAI said, "Clean and sanitise the knives and cutting boards between cutting / slaughtering two birds, it said, adding that all the waste generated from the retail poultry shop must be properly disposed of. While handling and cooking of poultry meat, the FSSAI suggested not to wash the chicken in running water as it may cause water splashing and spread of droplets contaminating the surroundings."

Many states in India have confirmed the avian influenza, widely known as the bird flu. Some also banned the sale of chicken and eggs as a precautionary measure; the ban is now being lifted, however, since there is a lot of uncertainty surrounding the flu, FSSAI put out a guide to eat chicken and eggs the right way.

The 10-point guide on the safe handling, processing and consumption of poultry in the time of bird flu was released on 21 January 2021, Thursday on FSSAI's official website.

Here is a list of Do's and Don'ts recommended by FSSAI :

- 1) Do not eat half-boiled eggs.
- 2) Do not eat undercooked chicken.
- 3) Avoid direct contact with birds in the infected areas.
- 4) Avoid touching dead birds with bare hands.
- 5) Do not keep raw meat in open.
- 6) No direct contact with raw meat.
- 7) Use a mask and gloves at the time of handling raw chicken.
- 8) Wash hands frequently.
- 9) Maintain the cleanliness of surroundings.
- 10) Eat chicken, eggs and their products after cooking.

The guidelines issued by FSSAI noted that the virus is destroyed at 70°C if held for 3 seconds. Well cooked poultry meat or eggs to achieve a temperature of 74°C in eggs or all parts of meat will most likely kill the virus. Therefore temperature is important. The FSSAI also discouraged people from panicking and causing further confusion.

Telangana: Minister Talasani convenes emergency meeting over bird flu



Talasani Srinivas Yadav, Minister of Animal Husbandry, Fisheries, Govt. of Telangana

6 January 2021: Minister for Animal Husbandry Talasani Srinivas Yadav on 6 January 2021, Wednesday convened an emergency meeting with the officials of veterinary and animal husbandry department and discussed the measures to be taken up to prevent bird flu in Telangana.

Sri Talasani Srinivas Yadav Garu held a review meeting at Burgula Rama Krishna Rao Bhavan along with Minister Eatala Rajender Garu, Secretary to AH Dept Anitha Rajendra Garu, HM & FW Dept Secretary Rizvi

Ji, MP Dr Ranjith Reddy Garu & discussed on the preventive measures to be taken to prevent the spread of Bird Flu outbreak in State.

Telangana Ministers review meeting at BRK Bhavan to prevent the spread of Bird flu outbreak in State.

He asked the officials to be on alert on the migratory birds and also directed to send the samples of dead chicken to Veterinary Biological and Research Institute (VBRI) for testing. The minister said specially formed teams with 1,300



Telangana Ministers review meeting at BRK Bhavan to prevent the spread of Bird flu outbreak in State.

staff are in contact with the poultry farms and suggesting the measures to follow to improve health and productivity of birds.

Due to the bird flu, chicken sales have been banned in four states in the country. States like Rajasthan, Himachal Pradesh, Madhya Pradesh, Haryana, Kerala and Gujarat were impacted

with the bird flu.

Chevella MP and president of Telangana poultry breeders said that there is no impact of bird flu in the state poultry industry so far. Telangana usually exports chicken and eggs to states like Uttar Pradesh, Maharashtra, West Bengal and Delhi.

Courtesy: The Hans India

Animal Husbandry Secretary writes to Chief Secretaries of all States on Bird Flu

Do not impose ban, Allow selling of poultry products sourced from non-infected areas

Below is the text of the circular sent by the Secretary, Department of Animal Husbandry & Dairying to all the Chief Secretaries of the States / UTs:

D.O. No. R-43023/1/2019-NLM—DADF

14th January, 2021

Dear *Chief Secretary,*

As you may be aware that 10 States have reported Highly Pathogenic Avian Influenza. In the present scenario Avian Influenza has been detected in wild birds and poultry. It is observed that the States and local administrations have banned movement of live birds, chicken meat and egg including processed meat, canned meat etc.

2. This Department has taken various steps to control and containment of the disease. However, it is observed that the States have put ban on the movement and selling of poultry products including processed products either by the State as a whole or by the local authority. Such kind of banning has created panic in human being.

3. I would impress upon that Avian Influenza is a virus that infect the birds. India had been reporting the disease since 2006 and every year the disease outbreak happens. Till date there is no report of human infection. The country has been controlling the disease effectively through culling. There is no scientific report available all over globe that the infection of H5N1 or any other Strain of Avian Influenza viruses spread through the processed products.

4. It is further clarified that the virus gets destroyed at 70 degree centigrade within 3 second. Therefore, consumption of meat and egg properly cooked at 70 degree have no risk. The banning of movement of poultry because of infection in wild bird is not justifiable and do not have scientific basis. The ban should be imposed only within the radius of 10 Km of infected zone.

5. Therefore, you are requested to issue instruction to concerned State authorities and Local Administration not to impose ban and allow selling of poultry products sourced from the non-infected areas/ states etc.

With regards.

Yours sincerely,

(Atul Chaturvedi)

All the Chief Secretaries of the State

Don't shut poultry markets, well-cooked meat safe: Govt

New Delhi: Amid cases of avian flu reported from several places across the country, the Centre on 11 January 2021, Monday asked states not to close markets of poultry products out of panic, saying there is no risk to humans if animal or poultry products are boiled or

market for 10 days, Singh said the move has created panic. Instead of closing the market, the Delhi government should take precautionary measures like other states as per advisories / guidelines issued to them, he added. Besides closing the wholesale poultry market



cooked properly before consumption.

"There is no need to get panicked about bird flu. The cases of bird flu have been frequently reported in India since 2006," said Union Minister of Animal Husbandry and Dairying, Giriraj Singh, even as his ministry confirmed positive cases of avian influenza from 10 states / UTs, including Delhi.

Uttarakhand has become the 10th state in India to confirm cases of bird flu after Kerala, Rajasthan, Madhya Pradesh, Himachal Pradesh, Haryana, Gujarat, Uttar Pradesh, Delhi and Maharashtra reported the outbreak over the past couple of weeks.

Referring to the Delhi government's decision to close the Ghazipur poultry

in the Capital, the city government has also decided to restrict supply of processed chicken from outside Delhi. The ministry had written to chief secretaries of all states / UTs on January 8 in the wake of confirmation of avian flu cases in certain areas.

"It is gathered from the states as well as media that there is panic and confusion in the general public with regard to consumption of poultry products like eggs and chicken. In this regard, awareness among poultry farmers and general public about the disease is of foremost importance. Accordingly, I would request you to arrange to issue appropriate advisories to quell

>>

Impact of Bird flu on Livestock feed manufacturing industry, an allied sector of Poultry industry



Amit Saraogi, MD, Anmol Feeds Pvt Ltd

Kolkata: "After the jolt of COVID and unfounded scare last year when price crash then was triggered by unsubstantiated rumours about poultry products, especially chicken meat posing the risk of Covid-19, sales and businesses has again nosedived, this time over Avian Influenza, said Mr Amit Saraogi, Managing Director, Anmol Feeds Pvt Ltd, livestock feed producers in India.

The country's poultry industry is worth nearly INR 1.25 lakh crore, owing to the festive season and normalcy coming back to

lives gradually, the sales were picking up, but there is a repeat collapse. Since birds in poultry farms are generally isolated, chances of their catching the virus from foreign avian species are extremely low. They adhere to scientific vaccination schedules and feeding regimens, are at far less risk. People should not be unnecessarily worried, additionally, the methods of eating chicken and eggs in India do not raise the question of transmitting bird flu to human species, he stated.

An estimated 1.3 crore live broiler birds and 20 crore eggs on an average are sold daily in India, and these numbers can rise to 1.5 crore and 28-29 crore during winter. The bird flu scare, however, has led to consumption dropping by 30-40 per cent in the last 4-5 days. Rate of ready bird is down by approximately 40 percent thus triggering a reduction in feed demand by 20 percent" said Amit Saraogi.

>> consumer reactions, affected by rumours, and increase awareness regarding safety of poultry products that are safe for consumption following boiling / cooking procedures," said Atul Chaturvedi, Secretary, Animal Husbandry & Dairying, in his letter to the chief secretaries. Chaturvedi also requested

animal husbandry departments in states to en-sure effective communication and coordination with the health authorities for close vigilance of the disease status and avoid any chances of transmission of the virus to humans, according to a report published in The Times of India.

EW Nutrition Acquires Feed Quality and Pigment Business from Novus International

VISBEK, February 1, 2021:

On February 1st, EW Nutrition concludes the acquisition of the Feed Quality and Pigment business from Novus International, including Novus's manufacturing plant in Spain, Mr Michael Gerrits, Managing Director, EW Nutrition informed through a press release from both EW Nutrition and Novus International.

EW Nutrition will be the owner of world-renowned brands such as the Santoquin® feed preservative range, SURF•ACE®, a feed mill processing aid, and the feed additive Agrado®. The transaction solidifies EW Nutrition's commitment to comprehensive animal nutrition solutions, delivered with expert support. EW Nutrition thus reinforces its market position while increasing its product portfolio.

We will continue to place customers first and foremost, providing expertise, support and further development for the newly acquired solutions. We will continue to service, to the same standards of excellence, those products and programs marketed in the last years.

EW Nutrition, a global provider of animal nutrition solutions, announced today that it has acquired the Feed Quality and Pigments business from Novus International, Inc. Under the terms of the agreement, EW Nutrition

becomes the owner of world-renowned brands such as Santoquin® feed preservative, SURF•ACE® feed mill processing aid, and Agrado® feed ingredient. The acquisition also gives EW Nutrition ownership of a state-of-the-art production facility in Constantí, Spain.

"This transaction will bring additional value to our customers, further reinforcing EW Nutrition's global market position, and increasing its product portfolio and geographical reach," says Michael Gerrits, Managing Director of EW Nutrition. "The products acquired will further support EW Nutrition's mission to mitigate the impact of antimicrobial resistance by providing comprehensive animal nutrition solutions."

Dan Meagher, President and CEO of Novus International, Inc., explained that the sale is part of Novus's Project Destiny, a multi-year plan to transform the company into the industry's leading provider in animal health through nutrition solutions by focusing its resources on core platforms and emerging technologies.

"We are pleased to have found a committed owner for these platforms so that they may continue bringing value to the industry," said Meagher. "This event is a significant milestone in our Project Destiny journey. Now that our Feed Quality and Pigments platforms are in good hands with EW

Nutrition, we are excited to focus our energies on developing new, innovative technologies into meaningful nutrition solutions for our customers."

The transaction was closed on February 1, 2021. A robust services agreement between the companies is governing critical activities to ensure customers are supported through the transition.

The financial details of the sale are confidential.

About EW Nutrition

EW Nutrition is a global animal nutrition company that offers integrators, feed producers, and self-mixing farmers comprehensive, customer-

focused solutions for gut health management, antibiotic reduction, young animal nutrition, toxin risk management and more. www.ew-nutrition.com

About Novus International

Novus International, Inc. is a leader in scientifically developing, manufacturing and commercializing animal health and nutrition solutions for the agriculture industry. Novus's portfolio includes ALIMET® and MHA® feed supplements, MINTREX® chelated trace minerals, CIBENZA® enzyme feed additives, NEXT ENHANCE® feed additive, ACTIVATE® nutritional feed acid, and other specialty ingredients. Novus is privately owned by Mitsui & Co., Ltd. and Nippon Soda Co., Ltd. Headquartered in Saint Charles, Missouri, U.S.A., Novus serves customers around the world. www.novusint.com.

One little **Egg** is packed with several **Vitamins** essential to your health

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Courtesy: NECC

35th Edition

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BIOSECURITY ON POULTRY FARMS IN INDIA

muskan@groupteamwork.com



Kishore Gedam,
Techno Commercial Manager,
Proteon Pharmaceuticals India.

In 2018, the Indian poultry market was valued at INR 1,750 billion and it is expected to reach INR 4,340 billion by 2024. Notable for its production of eggs, meat and employing rural people, poultry farming in India is growing every year. However, with the tremendous growth, the incidences of infectious disease outbreaks in poultry farms have also increased across different regions. To counter the challenge, biosecurity on poultry farms has received increased interest, especially over the past few decades.

What is Biosecurity?

Biosecurity refers to the procedures or methods used to prevent the spread and introduction of disease-causing organisms in poultry farms. Infectious agents like parasite, fungi, protozoa, viruses and bacteria are a serious threat to poultry health which in turn leads to morbidity and mortality. Biosecurity aims to overcome the indirect and direct threat of diseases to poultry through effective control measures like cleaning, disinfection, traffic control and segregation. Its main objectives are:

- Keep out highly contagious diseases like Newcastle Disease (RD), Infectious Bronchitis (IB), Gumboro Disease (IBD), etc.
- Reduce pathogens like Salmonella and E. coli, etc
- Control vector habitat and attractants
- Sanitisation of equipment and supplies
- Improve the health of the flock
- Reduce mortality losses
- Increase profitability



Highlight Points

In 2018, the Indian poultry market was valued at INR 1,750 billion and it is expected to reach INR 4,340 billion by 2024. Notable for its production of eggs, meat and employing rural people, poultry farming in India is growing every year. However, with the tremendous growth, the incidences of infectious disease outbreaks in poultry farms have also increased across different regions. To counter the challenge, biosecurity on poultry farms has received increased interest, especially over the past few decades.

Why Biosecurity is a Decisive Factor for the Indian Poultry Industry?

Despite being one of the largest producers of broiler meat and eggs, the Indian poultry industry is faced by some major challenges. The majority of Indian poultry farms are open buildings where climate control and quarantine mechanisms are out of place. This exposes the birds to potential epidemics and diseases. A study conducted on the samples collected from 160 chickens received at Veterinary University Disease Diagnostic Laboratory (VUDDL) in Tamil Nadu from 2014 to 2016 showed the rapid prevalence of infectious diseases like Newcastle Disease, E. Coli infection, Klebsiella spp infection, Salmonellosis, Fowl Cholera, Clostridia infection and Candida infection.

The domestic poultry market in India lacks comprehensive quality standards to maintain optimal hygiene in poultry farms. Farm licensing is done at the municipality level where people often lack the expertise, knowledge and human resources to adhere to the quality standards.

Lack of clean and hygienic dry processing facilities along with waste treatment plants can lead to serious environmental concerns. The wet processing machineries can be a serious threat to the environment owing to poor waste disposal management.

On top of that, the intensive poultry farming practises are restricting the birds to immunologically compromised, unhygienic crowded locations that are leading to zoonotic disease outbreaks. To combat the zoonotic diseases, there is indiscriminate use of antibiotics which is leading to bacteria developing resistance against them.

The fight against these challenges requires extensive biosecurity measures at every step of poultry farming to mitigate the threats and remain profitable.

The Rising Concern of Zoonotic Diseases

Intensive poultry farming practises across the country leading to skin lesions, painful lameness, bone problems, lung problems, breathing difficulties and skin lesions in chickens. A huge percentage of chickens raised through poultry farming in India spend their entire lives in poorly lit, barren and cramped spaces. All these factors lead to the evolution of different zoonotic diseases. The infected birds are further spreading the infection to other flocks, and even to humans, through consumption of eggs and meat.

The indiscriminate use of antibiotics to keep a check on the diseases and to help the birds gain weight faster are further adding to the woes. The use of antibiotics is accelerating the development of antibiotic resistance in the pathogens that can lead to treatment failures, transmission to humans and economic losses.

When it comes to meat and egg consumption, food safety has become a serious concern among consumers. To understand the perception of consumers regarding chicken's reared for food, World Animal Protection carried out a survey that covered different countries like Indonesia, India and Thailand in south-east Asia. In the survey, it was found out that 9 out of 10 consumers had concerns about chicken farming and 1 in every 5 consumers had concerns about chicken gut health, how the chickens were raised and where the meat came from.

The Way Forward

In poultry production, biosecurity acts as a fundamental component. Negligence to biosecurity measures will result in huge losses to the poultry industry in India as it acts as a barrier against perpetuation, penetration and infection. Biosecurity standards need to be developed and upgraded. Apart from that, there is an urgent need for research tie-ups with various institutions concerning production, processing and marketing of poultry products. Farmers also need to be educated about biosecurity needs through awareness programs.

To suppress the use of antibiotics that is resulting in the development of superbugs, bacteriophage therapy is an alternative solution which can be adopted by poultry farmers. Bacteriophages are beneficial viruses or "bacteria eaters" that can infect and kill targeted pathogenic bacteria without causing any damage to the chickens and even humans. Leading the way, Proteon Pharmaceutical is showing how innovative bacteriophage solutions can revolutionise the approach to control and eliminate the pathogenic bacteria in poultry farming. They have developed a unique way to use bacteriophages in a controlled and sustainable manner to control and eliminate the pathogenic bacteria without any harm to chicken gut health or microbiome & improve the production performance of poultry to increase the profitability.

Never Underestimate the Importance of a Healthy Gut!



Kurt Van de Mierop,
Managing Director,
Nutrex, Belgium
kurt.vandemierop@nutrex.eu

Highlight Points

The increasing genetic potential of our livestock and intensive production systems together with the clear and inevitable need to move away from anti-microbial growth promoters requires alternative strategies to support and maintain an optimal gut health for improved animal welfare and performance.

What are the functions of the gut?

Digesting feed and absorbing nutrients

Digestion of feed can be divided in two distinctive processes:

- (1) the mechanical digestion by chewing, grinding, churning and mixing in upper gastrointestinal tract (mouth/crop and stomach) and
- (2) chemical digestion using enzymes and



bile acids to break down feed material into its constituent components in the small intestine. Nutrients are absorbed in the small intestine which has a large inner surface area due to folds of the epithelial layer (villi) and presence of microvilli on the enterocytes within the epithelial layer.

Providing protection against pathogens and toxins

Intestinal integrity is the ability of the GIT to act as a physical barrier, preventing the translocation of pathogens and potentially harmful molecules such as mycotoxins and endotoxins. Intestinal integrity is considered to be mainly maintained through (A) the mucus layer, covering the epithelial cells, and (B) tight junction proteins, connecting the epithelial cells. Impairment of the intestinal integrity may lead to microbial translocation (pathogens and toxins such as endotoxins), possibly causing inflammation.

Gut associated lymphoid tissue (GALT)

The GIT is considered to be the largest organ of the immune system as more than 70% of the cells of the immune system are located there. The GALT comprises of set of cells such as mesenchymal cells, dendritic cells, lymphocytes and macrophages located beneath the mucus layer and the single layer of epithelial cells. **The main function of the GALT is to recognize and respond to pathogenic stimuli**, without mounting an inflammatory response when it processes antigens from food or the commensal microbiota.

Harbouring a balanced microbial population



The gut microbiota is a vast group of microorganisms including bacteria, viruses and fungi residing predominantly in the hindgut, and that lives in symbiosis with the host. **A healthy and well - balanced microbiota is key for a healthy animal as the gut microbiota contributes to the intestinal integrity, the digestion of nutrients and supports the immune system.** Various stress factors can affect the gut microbiota and cause an imbalance or dysbiosis in the bacterial population by decreasing the beneficial bacterial population and increasing the unfavourable bacterial population.

What is optimal gut health?

Optimal gut health depends on the intestinal integrity, the mucosal immune system and the microbial population, and their interactions. Under ideal conditions, these components are in balance and most dietary nutrients are directed towards growth and production. However, modern production systems expose animals to various stress factors throughout their life cycle. These stress factors, such as pathogens, toxins, heat stress, vaccinations, feed quality and feed transitions, can lead to an imbalance between the intestinal integrity, the microbiota and the immune system. As a result, digestion and absorption of nutrients become ineffective and more nutrients are used by the immune system, at the expense of the zootechnical performance.

Promoting gut health with feed additives

The increasing genetic potential of our livestock and intensive production systems together with the clear and inevitable need to move away from anti-microbial growth promoters requires alternative strategies to support and maintain an optimal gut health for improved animal welfare and performance.

Nowadays, feed additives have a crucial role to play in strengthening intestinal health and reducing antibiotic use by:

- Improving feed digestion (feed enzymes)
- Reducing the presence of toxins, such as mycotoxins and endotoxins (binders)
- Supporting gut integrity (Immunomodulators, Phytogenic products, Acidifiers)
- Supporting gut development (Immunomodulators)
Stimulating a beneficial microbiota (Immunomodulators, Acidifiers)

A Surgical Strike on Bacteria

eXolution Bacterophage F

For millions of years, bacteriophages have been hunting down and killing bacteria. **eXolution Bacterophage F** uses a cocktail of these ancient killers to purge disease-causing bacteria in a formulation created specifically for use in poultry.

Each bacteriophage is a virus that has evolved to target and eliminate only a specific bacteria; leaving other beneficial bacteria completely unharmed.

This natural surgical strike on disease-causing bacteria is the safest, non-toxic, and **effective prophylactic alternative to antibiotic growth promoters.**

FOR USE IN BROILERS, LAYERS & BREEDERS

BENEFITS TO THE FLOCK

Natural:

No Toxins, No Residues, No Side-effects, No Withdrawal Time

Surgical:

Targets and eliminates specific bacteria, even those resistant to antibiotics

Protective:

Maintains gut bio-balance by retaining beneficial bacteria

Probiotic:

Enriched with *Bacillus Subtilis*

Flexible:

Compatible with all Performance Enhancers, Growth Promoters, Acidifiers, Anti-Oxidants, Minerals & Enzymes

Stable:

Thermostable and suitable for Pelleting

BACTERIA IT CONTROLS

Salmonella

Typhimurium, Gallinarum, Choleraesuis, Derby, Dublin, Enteritidis, Pullorum

E. Coli

F4 (K88), F5 (K99), F6 (987P), F18, F41

Clostridium Perfringens

Type A, C, B, D, E

Staphylococcus Aureus



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UNDERSTANDING THE ROLE OF THE SKELETON IN EGG PRODUCTION

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Technical Team,
Hy-Line International.

Soft bones and thin fragile bones are issues that affect producers of high-performing egg layers all around the world. Osteomalacia and osteoporosis most commonly arise from deficiency, imbalance or malabsorption of calcium, phosphorus, or vitamin D3. The effect of skeletal issues on a flock typically is

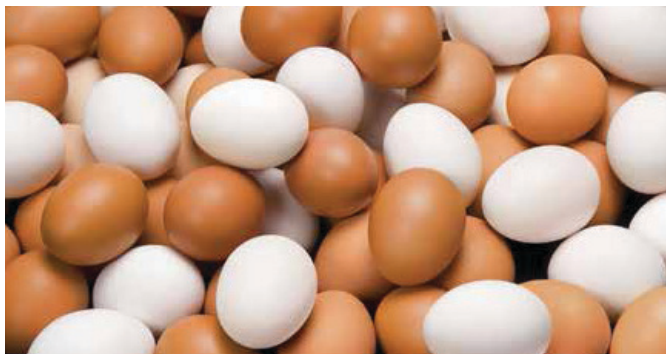
demonstrated by decreased production, crooked keels, fractures and poor shell quality.

All hens require a specific amount of nutrients to maintain production and skeletal structure. The skeletons and dietary requirements of hens are unique relative to the level of calcium consumed and the amount of bone that is constantly being built and resorbed. When soft bones or poor shell quality is found, usually at least one of the following factors is involved: pullet growing, nutrition, feed consumption, or disease.

OVERVIEW OF BONE BIOLOGY

The avian skeleton is a unique system that is specialized for flying, walking on two legs and laying eggs. Establishing and maintaining a strong skeleton is vital to ensure a productive laying hen. In order to understand the impact of diet on the laying hen, it is important to understand the biology of the skeleton. There are three different types of bone: cortical, trabecular and medullary.

- Cortical bone is the hard outer surface of the round bones, such as the femur or the humerus, and the flat bones, such as the skull or the pelvis.
- Trabecular or spongy bone is less dense than cortical bone and helps support the structure inside the cortical bones.



GLOSSARY

Crooked: not straight; having curves

Labile: constantly undergoing change

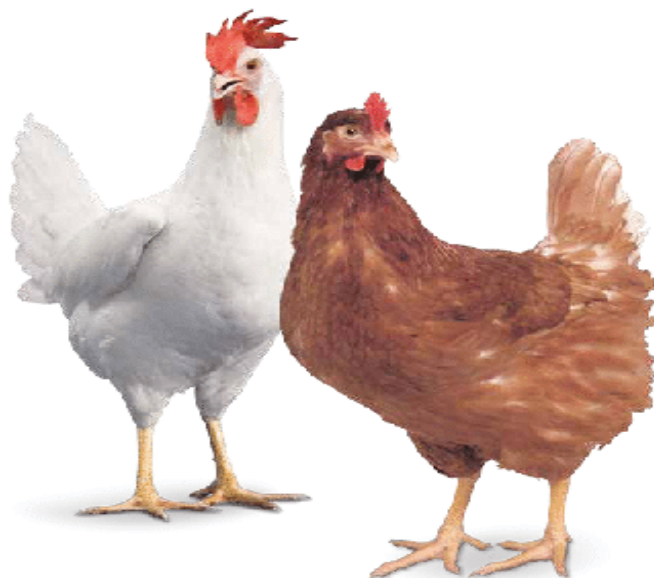
Osteomalacia: decalcification or softening of bones due to bone mineralization issues caused by insufficient levels of available phosphorus and calcium or due to excessive resorption of calcium from the bone

Osteoporosis: a progressive bone disease resulting in decreased bone mass and density

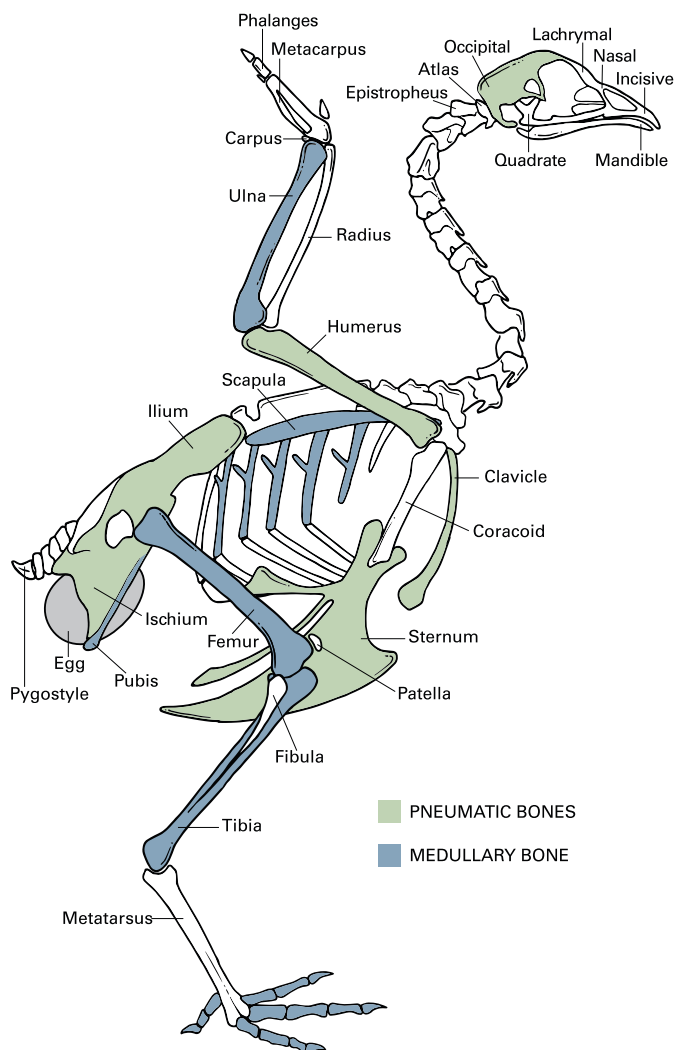
Resorb: to dissolve/break down and assimilate

Resorption: destruction or loss of tissue or bones.

- Medullary bone is a specialized woven bone which serves as a calcium reserve for the demands of egg shell formation. Easily created and resorbed, medullary bone is ideally the first source mobilized when more calcium is required. While the outside appearance of avian bones is similar to those of mammals, there are several key differences.



The Skeleton of the Fowl



- Fused vertebrae – Several thoracic and lumbar vertebral spinal sections are fused together to form a more solid structure for flying.
- Keel – The sternum or keel provides a large surface for attachment of the pectoral muscles which are important for energy storage and muscle yield.
- Pneumatic bones – Hollow and air filled, these bones are part of the respiratory system and help with flying.
- Medullary bone – This specialized bone is used as a source of calcium for the egg shell and only occurs in birds and some reptiles.

Bone growth and resorption is controlled and regulated by a few important cells and many different hormones. In healthy, well-fed birds, the cells and hormones work closely together to maintain bone structure and blood calcium levels needed for optimum production.

The important cells for bone growth and modelling are chondrocytes, osteoblasts, and osteoclasts.

- Chondrocytes start the basic process for bone growth by secreting type II collagen and other important components for bone formation.
- Osteoblasts then produce the type I collagen and the increased levels of calcium and phosphate that result in

the mineralization or ossification of the bone.

- Osteoclasts resorb bone for remodelling or for releasing calcium into the blood stream.

Bone growth and resorption is regulated by a number of different hormones which control when structural or medullary bone grows or resorbs, depending on the physiologic need.

- Growth hormone stimulates cellular growth and protein synthesis throughout the body.
- Thyroxine stimulates cell metabolism as well as osteoblast activity.
- Melatonin influences osteoblast activity. Melatonin levels are highest when birds are sleeping during the dark period and initiate a cascade of events affecting hormones necessary for egg production.
- Estrogen increases at sexual maturity and changes osteoblast activity from creating cortical and trabecular bone to creating medullary bone. After the first egg, the only way a hen can remodel structural bone is during periods of low estrogen, such as molt or breaks in lay during the normal production period.
- Calcitonin is released when there are high serum calcium levels and decreases osteoclast activity while increasing osteoblast activity which builds bone and lowers serum calcium levels.
- Parathyroid hormone (PTH) is released during periods of low serum calcium and binds to osteoblasts. This binding decreases osteoblast activity while releasing a compound that increases osteoclast activity, thus increasing serum calcium levels. Additional properties of PTH include increasing small intestine absorption of calcium and decreasing urinary excretion of calcium.
- Calcitonin and parathyroid hormone work together in feedback loops to ensure the proper levels of serum calcium are maintained

THE IMPORTANCE OF GOOD QUALITY PULLETS

A strong skeleton starts with good pullet quality. Best management practices should always be used when growing pullets. Please refer to the Hy-Line International Technical Update "Growing Management of Commercial Pullets" for information regarding pullet programs.

Chicks hatch with relatively underdeveloped internal organs and systems. The main systems that are developing in the initial weeks after hatch are the intestinal tract, the immune system and the integument (skin and feathers). The development of the intestine is crucial for nutrient absorption and will determine a hen's future production efficiency. Strong intestinal development will also strengthen the immune system and minimize the possibility of future enteric diseases.

Starting at about six weeks of age, pullets have a more mature intestinal tract and immune system and also are able to regulate body temperature which allows for more energy to be allocated for growth. The fastest rate of growth for the skeleton occurs between 6 and 12 weeks of

age. During this time period, layer pullets gain an average of 90 to 110 grams of body weight per week. By 12 weeks of age, the skeleton is 95% developed and once the bone growth plates close around the time of sexual maturity, no more bone length can be added. Any delay in growth will affect the size of the mature bird and delay the onset of production.

At 13 weeks of age pullets have reached about 95% of their adult size, but only 75% of their mature weight. Over the next 6 weeks muscle, medullary bone and reproductive tract development will constitute much of the weight gain. Once birds have reached the appropriate level of development as determined by body weight, the flock will be ready for light stimulation to start egg production. Laying hens will continue to add muscle and bone mass and gain weight until around 32 weeks when the full mature body weight is achieved.

A pullet flock that experiences higher levels of stress during periods of rapid growth is more likely to have poor uniformity that can affect peak production. When a flock lacks uniformity, the lighter birds will not come into production for up to 10 weeks after birds that meet or exceed ideal body weights. Therefore while most of the flock may be laying at 96%, the 5% of the flock that is underweight may be laying sporadically (or not at all) and will reduce the peak production percentage. Stressors that may be avoided include moving, injecting with inactivated vaccine, wide ranges of environmental conditions inside the house, poor feed quality, crowding and any other abrupt changes in routine.

Crowding in the pullet house usually starts to affect birds at approximately 10–12 weeks when the skeleton is near full size. Crowded pullets will have issues with uniformity and body weight gain until transfer. Refer to the Performance Standards Manual for rearing space recommendations.

Measuring body weight gain and uniformity is an excellent method for tracking flock growth throughout pullet growing. Higher body weights result in larger skeletons and more muscle mass which leads to better production. Waiting to light stimulate until target weights are met is the most effective solution to ensure good persistency of lay and avoid a post-peak dip in production. Monitoring body weights every week should not stop at transfer. It is ideal to weigh every week up to 32 weeks of age and at least every 2 to 4 weeks until the end of lay. This practice will give an indication if nutrient intake is sufficient to support production, growth, and maintenance requirements of the bird.

SEXUAL MATURITY IN THE LAYING HEN

About two weeks prior to egg production, the hen will undergo sexual maturity. An increase of estrogen will stimulate development of the oviduct, reddening of the comb and wattles and a complete transition from building skeletal bone to building medullary bone.

To aid the growth of medullary bone before the first egg, it is recommended to introduce more calcium through

the use of a Pre-Lay Diet. Constantly improving genetics provide producers with layers capable of very high peaks of lay and good persistency. To ensure that genetic potential is reached, building medullary bone and formulating diets with sufficient nutrient density to meet the daily requirements of the bird is very important. However, there can be a negative impact on feed consumption from the sudden increase in dietary calcium levels of 1% to above 4% at the start of lay. Field experience indicates that the use of Pre-Lay Diets helps as a transition between the Developer and the Peaking Diet. Correct feed formulation and matching diet density with consumption will minimize the impact of reduced calcification of bone over the laying cycle and extend the persistency of shell quality.

BONE QUALITY DURING PRODUCTION

The length and width of the poultry skeleton is complete when the hen has started to lay. However, the bone mineral density and content, as well as the ratio of cortical, trabecular and medullary bones can change dramatically. The laying hen skeleton is strongly influenced by level of egg production, diet formulation in relation to consumption and disease status. A well-grown laying hen will typically not face skeletal issues until after peak, even with mild to moderately deficient diets. With an underweight laying hen, nutrient deficiency will more quickly affect flock results. Mild to moderate nutrient deficiencies will usually cause skeletal and/or shell quality issues first with production issues following. Severe nutrient deficiency will still cause noticeable and rapid drops in production.

Many animals, including birds, experience thinning of the cortical and trabecular bone thickness with age. Laying hens also experience changes in overall bone strength. Although medullary bone is the most labile bone type, if a hen is calcium deficient, cortical and trabecular bone will also be mobilized as a calcium source. During the laying period, hens have been shown to have a net increase in bone mass as a result of medullary bone formation and the loss of structural bone. However, without a molt or cessation of production due to nutrient deficiencies, the constant high level of estrogen in a laying hen will prevent the repair of structural bone. Loss of cortical bone can result in crooked keel or bone fractures, both of which are detrimental to hen welfare and production.

As birds age, medullary bone content will increase while structural bone integrity typically decreases. Birds that lose too much cortical bone and gain medullary bone can have good shell quality, but are at a higher risk for keel curvature or bone fracture. The best way to minimize the loss of cortical bone is to ensure that the correct levels of calcium, phosphorus and vitamin D₃ are fed throughout the lay cycle.

Preventing loss of skeletal integrity starts with the pullet, but continues through the life of the bird. It is also important to understand the clinical signs of osteomalacia, osteoporosis and osteopenia and make the appropriate changes as soon as possible.

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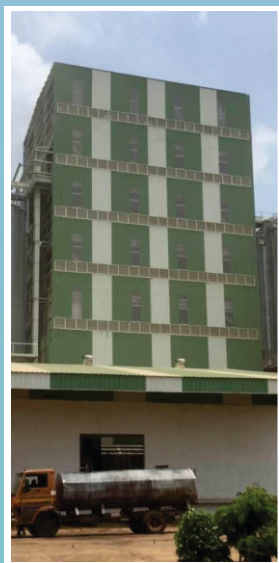
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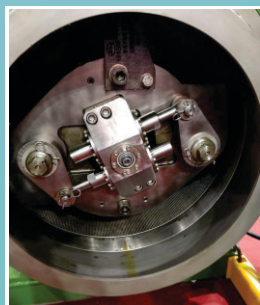


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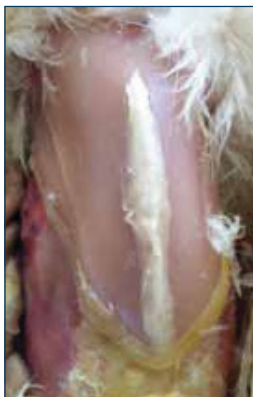
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MONITORING SKELETAL INTEGRITY

#1 – Normal Keel



#2 – Mild Curvature



#3 – Moderate Curvature



#4 – Severe Curvature



The best way to minimize the impact of soft bones in a flock is to monitor regularly. Handling birds while weighing is the ideal way to collect this information. Select birds from the same cage, colony or section of the barn at least every 4 weeks to ensure consistency of data and provide early notice if crooked keels are observed.

- Keels are scored by feel and observation. The Hy-Line method is to score on a four point scale based on normal (#1), mild (#2), moderate (#3) or severe (#4) curvature.
- At the beginning of calcium, phosphorus or vitamin D3 deficiencies, keels may be flexible, but not yet curved. This is an important clinical sign to note.
- Hens with recalcified, curved keels would indicate a nutritional deficiency earlier in the life of the flock.
- It is ideal to handle a minimum of 10 birds in at least 2 to 3 areas of a barn.

Overall, it is ideal to have greater than 90% of birds handled in the Score 1 or Score 2 category. More than 10% Score 3 or Score 4 birds, or increasing numbers every week, indicate the possibility of an issue.

NUTRITION

Feed consumption and nutrition always go hand in hand. All diet formulations must be based on feed consumption to ensure proper intake of the critical nutrients. As a result, all Hy-Line diets are recommended on the basis of total daily feed intake. Focusing on calcium and available phosphorus, as examples, the Hy-Line Brown and Hy-Line W-36 need to consume the following amounts each day in her ration:

	Peaking Diet		Lay Diet #2		Lay Diet #3		Lay Diet #4	
	Hy-Line Brown	Hy-Line W-36	Hy-Line Brown	Hy-Line W-36	Hy-Line Brown	Hy-Line W-36	Hy-Line Brown	Hy-Line W-36
Calcium (g/day)	4.20	4.10	4.30	4.30	4.50	4.45	4.80	4.60
Available Phosphorus (mg/day)	460	485	420	470	380	450	360	400

Attaining the required levels for these nutrients is significantly dependant on daily feed consumption. A sample calculation for a bird recommended to have 4.00 grams of calcium per day and with an observed feed consumption of 95 grams is as follows:

$$\frac{4.00 \text{ g calcium needed} \times 100}{95 \text{ g feed consumed}} = 4.21\% \text{ calcium in the diet}$$

Limestone particle size is also important for optimum shell quality. Pullets should have fine particle calcium, ideally less than 1.1 mm (1100 micron) average. It is best to use limestone flour for pullets as the smaller particles are more easily absorbed.

Layers should ideally receive a 50:50 ratio of large and fine particle limestone at the start of lay and transition to a 65:35 ratio (large: fine) by the end of lay. Changing the particle size ensures that more calcium will be available at night from the diet instead of from the bone. Further measures to increase night calcium availability include ensuring a last feeding 1–2 hours before lights are turned off and adjusting the feeding regime to 40% in the morning and 60% in the afternoon.

The large particle fed during lay should be around 2–4 mm (2000–4000 micron) average size with an ideal 3 mm (3000 micron) size. When calcium particle size is above 3.5 mm (3500 micron), the solubility rapidly decreases.

If the hen is not effectively absorbing the calcium in the diet, she can be deficient (even with an accurate “calculated value” of the ration).

Additionally, the source of limestone should be checked. Low calcium content limestone (less than 37%) may contain other minerals that reduce the solubility (and therefore the calcium availability).

Depending on geological formation, different limestone structures exist which may also affect solubility and availability.

Phosphorus intake is similarly calculated, although the requirement definition is more complex due to different systems used to express available and digestible phosphorus. Care needs to be taken that requirements and the availability matrix are being expressed on the same system. There are ongoing projects in the US and the EU to review the phosphorus nutritional systems and create a more universal standard.

The use of phytase enzymes must be considered when formulating the diet. Phytase is an important tool in reducing both the cost and environmental burden of animal feeding; however care needs to be taken when applying matrix values. Matrix contributions need to be accurate for the phytase being used, the diet in which it is being used and the dosage being applied. The matrix contribution must not exceed the concentration of phytate phosphorus potentially available for release. This differs by phytase source, inclusion rate and the ingredient makeup of the diet.

Vitamin D₃ (cholecalciferol) is a critical nutrient that aids in calcium and phosphorus uptake in the small intestine, bone mineralization, inhibition of calcium excretion in the urine and immune system modulation. Vitamin D is typically included in the feed as vitamin D₃. It is absorbed in the small intestine and converted to 25-hydroxycholecalciferol in the liver.

This metabolite is then converted to the active form of 1, 25-hydroxycholecalciferol in the kidneys. Instead of vitamin D₃, 25-hydroxycholecalciferol can be used as a supplement for the hen. A more biologically active metabolite of vitamin D₃, 25-hydroxycholecalciferol provides a higher dose of vitamin D at a lower inclusion rate.

Other dietary factors are also important to consider in the efficiency of bone calcification and eggshell formation. This includes the acid base balance of the diet (or dietary electrolyte balance - DEB), vitamin K, zinc, copper, iron, manganese and magnesium. Some essential amino acids which are often limiting in laying diets (valine and arginine) may be important due to their role in calcium transportation and formation of the bone matrix.

FEED CONSUMPTION

Consumption volumes at the start of lay change quickly; for example, the Hy-Line Brown eats 80–90 g/day at the start of lay and soon eats 110–115 g/day in about 4–6 weeks at peak production. Often, feed mills may only have one Peaking Diet that is formulated for 110–115 g/day intake for brown birds and 100–105 g/day for white birds. When intake at the start of lay is only 80–90 g/day, there will be deficiencies of 20–25% in calcium, phosphorus, essential amino acids and other nutrients. Creating a diet matrix can help ensure that the correct dietary formulation is used. Not all diets will be used, but it will simplify ordering feed for a farm.

The bird is still growing until about 32 weeks and is adding muscle mass and bone density.

If there are deficiencies in the diet, the impact may not be immediate, but can be felt late in lay when hen body reserves have been depleted.

DISEASE

Nutritional issues are usually the primary cause for decreased skeletal integrity and resulting shell quality problems. However, many subclinical respiratory and enteric diseases may have the same effect. A decrease in feed consumption or nutrient absorption can have a dramatic impact on shell and bone quality as described previously. Bacterial, viral or protozoal pathogens may cause temporary or permanent damage to the intestine and reduce the absorption of key nutrients. The duodenum in particular is the location in the intestine where calcium is actively absorbed in response to increased demand under hormonal influence involving vitamin D₃. Diseases such as focal duodenal necrosis can damage the duodenum and may decrease the efficiency of absorption.

	Peaking Diet	Lay Diet #2	Lay Diet #3	Lay Diet #4
Daily Feed Consumption				
90 g/day	x			
95 g/day				
100 g/day	x			
105 g/day				
110 g/day	x	x	x	x



Additionally, there are many diseases that cause shell quality issues by affecting the oviduct, including infectious bronchitis, Newcastle disease, *Mycoplasma synoviae*, egg drop syndrome (EDS) and avian influenza.

ACTIONS WHEN SKELETAL ISSUES ARE IDENTIFIED

During routine handling, if soft bones or crooked keels are detected during lay, there are steps that can be taken to correct the issue.

General – should only be used until specific measures can be taken

- Add water-soluble vitamin D₃ or 25-hydroxycholecalciferol to the drinking water 1–2 times a week to increase calcium and phosphorus metabolism
- Add 2–4 mm large particle limestone or oyster shell to increase the level of calcium in the gizzard overnight and provide calcium for egg shell and strengthening bones.
- Review, and if necessary, increase the level of available phosphorus in the diet to help with bone strength and metabolism

Specific

- Verify or determine feed consumption of the flock
- Check the feed formula to ensure the correct amounts of calcium, phosphorus and vitamin D are specified

- Ensure that the daily levels of consumption meet the dietary needs of the hen
- Send feed samples for analysis to determine if calcium and total phosphorus levels are consistent with formulated values. When sampling, it is important to obtain a representative sample of the feed to minimize sampling error. A standard procedure for collecting accurate feed samples is to collect multiple sub-samples and mix them together. Use a portion of this mixed sample to send in for analysis.
- If a deficiency is found, work with the feed mill to prepare the correct formulation based on daily consumption
- Check the flock to see if there are any disease issues that are minimizing absorption or reducing feed consumption
- Ensuring good skeletal development from rear into lay through best management and nutritional practices is essential to reach the genetic potential of the Hy-Line layer. Understanding the importance of the skeleton in laying hen production will help producers implement best practices. Formulating the diet to consumption and monitoring the skeletal quality will create the environment to attain the best and most economical production.

Courtesy : Srinivasa Farms Private Limited/ Hy-Line International

Organic Poultry Farming in India



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The poultry population of India grew at an exponential rate of 16.8% from 2012 to 2019 taking the number to 851.8 million last year. When it comes to animal agriculture in India, the poultry sector was valued at INR 1,750 billion in 2018. The market is further projected to reach INR 4,340 Billion by 2024, growing at a CAGR of 16.2% during 2019-2024. With changing consumer preference and increased health awareness, there has been a sudden shift of attention towards sustainable organic poultry farming in India. Poultry farmers in India are starting to realise how a small shift from conventional systems can benefit the animals, consumers, and of course, their business.

Highlight Points

The poultry population of India grew at an exponential rate of 16.8% from 2012 to 2019 taking the number to 851.8 million last year. When it comes to animal agriculture in India, the poultry sector was valued at INR 1,750 billion in 2018. The market is further projected to reach INR 4,340 Billion by 2024, growing at a CAGR of 16.2% during 2019-2024. With changing consumer preference and increased health awareness, there has been a sudden shift of attention towards sustainable organic poultry farming in India. Poultry farmers in India are starting to realise how a small shift from conventional systems can benefit the animals, consumers, and of course, their business.

Issues with Conventional Poultry Farming

Over the last four decades, the poultry sector of India has transformed immensely to become a scientific, commercially organised industry. However, a major part of the poultry industry is still dependent on conventional methods that not only violate animal welfare but also cause expanding use of antimicrobials in poultry.

As a consequence of the growing demand for animal protein and use of antibiotics, drug-resistant infections in poultry and humans have become a serious issue. Under conventional systems, the use of antibiotics without any proper regulatory limits poses a serious threat of antibiotic resistance. Though in 2014 the Department of Animal Husbandry advised controlled use of antibiotics in animal feeds, so far it has made no difference.

According to the National Environmental Engineering Research Institute (NEERI), Arsenic is fed to chickens to promote growth and weight gain with less feed. The long term exposure to this substance can cause cancer. Growth hormones given to the fowls is another issue related to the health of the consumers.

Besides the growing use of antibiotics, conventional poultry farming practices also result in poor management of litter, manure, and wastewater that can adversely affect the lives of people.

How Organic Farming can be a Better Substitute

The “naturalness” of organic poultry farming can be a suitable alternative to conventional poultry farming methods. Organic poultry farming will result in birds having better outdoor access, low stocking densities, an organic diet, and treatment methods for diseases that do not use chemicals.

In 2014, the Center for Science and Environment conducted a study on 1500 samples from 530 birds on 18 poultry farms in 6 districts in Punjab to test their resistance to a variety of antibiotics crucial to human medicine. High levels of resistance to many important antibiotics were found – 39% for ciprofloxacin and 89% for nalidixic acid.

Even more alarming reports were shared by the Science journal recently stating that 4,796 tons of antibiotics will be fed to animals reared for food by 2030 if proper regulations are not put in place.

Unlike conventional poultry farming, organic poultry farming requires that poultry is raised without antibiotics, synthetic pesticides, hormones, and mammalian byproducts in the feed. To prevent the spread of diseases and counter antibiotic resistance, a new approach is being adopted across poultry farms globally i.e. bacteriophages. Bacteriophages are viruses that bind with the bacteria, replicates, and kills it by bursting or lysing. Bacteriophages are very specific and can be a better substitute for reducing the use of antibiotics in poultry. Bacteriophage based disinfectants are also helpful in preventing horizontal transmission of pathogens.

Wrapping Up

There is a severe lack of technical knowledge among

poultry farmers in India that leads to the acceptance of sub-standard practices. As a result, flock health is affected. Use of organic poultry farming procedures would lead to safer poultry products through proper poultry welfare. This would also make sure that consumers face no risk of infections from the consumption of poultry-based products like egg and meat.

Poultry Population in India	Grew at 16.8% from 2012 to 2019 taking the number to 851.8 million
Poultry Industry In India Valuation in 2018	INR 1750 billion
Poultry Market in India 2019-2024	Expected to grow at 16.2% to 4340 billion by 2024
In 2014 Department of Animal Husbandry	Advised controlled use of antibiotics in animal feeds
In 2014, the Center for Science and Environment conducted study on 1500 samples from 530 birds on 18 poultry farms in 6 districts in Punjab	High levels of resistance to many important antibiotics were found across the board

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Berberis lyceum (Indian Barberry): A Potential feed additive for Poultry production

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Highlight Points

- ▶ *Berberis lyceum* is a medicinal plant known to possess immense pharmacological properties viz., antimicrobial, antioxidant, anti-diabetic, anti-diarrheal, anti-protozoal, hepatoprotective, anti-hyperlipidemic etc.
- ▶ *Berberis lyceum* can act as an alternate growth promoter due to ban on the use of antibiotics as growth promoters in poultry, by modifying the gut microbiology and stabilizing the health status of birds.

Stimulation of the immune system and antioxidant defence in poultry has been a topical issue since the introduction of the ban on the use of antibiotics as growth promoters in animal feed. There is a demand for alternative feed additives that promote the growth of animals without negative side effects such as the antibiotic resistance of pathogenic strains. The beneficial influence of probiotics, prebiotics, acidifiers, enzymes and herbs on gut microbiota in monogastric animals has been widely researched. The use of plants as medicines is as old as the origin of mankind. The plant based, conventional medicine systems continues to play an essential role in health care, with about 80% of the world's inhabitants relying mainly on traditional medicines for their primary health care (Owolabi and Omogbai 2007). Since the origin of mankind people have mainly relied on plants for their food as well as their medicines for their treatment. Through trial and error they discovered that some plants were good for food, some were poisonous and some were also helpful in treatment of different diseases. Medicinal plants are getting attraction of most of the researches for the evaluation of new drugs, because of the polyvalent action and lesser side effects of plant products (Mahesh and Satish, 2008).

Herbs and spices contain numerous active ingredients which can exert various effects (bactericidal, immunomodulatory and antioxidant) on animals. Thus, they can affect the health status and productivity of animals as well as the quality of animal products (Madhupriya et al., 2018). However, the intensity and direction of the effects exerted by herbal preparations are difficult to predict. They are mostly determined by the concentrations of active

ingredients but may also be influenced by the presence of auxiliary substances and interactions with other active ingredients or feed components (Hashemi and Davoodi, 2011; Ogbuewu et al., 2018). Herbs and herbal extracts have been used in poultry production for years. Superliv is one of such herbal formulations. Due to the presence of multiple active ingredients, Superliv may exert multidirectional effects on animals, including the stimulation of their growth, performance and digestion. It may also act as a hepatoprotective agent that neutralizes toxins. The composition of diets supplemented with herbal extracts can be modified, e.g., by reducing their energy concentration. Stimulation of the liver's functions may affect a superior nutrient's digestibility and have a gainful effect on energy utilization. Thus, it can allow us to achieve high growth performance with lower energy concentrations in the diets.

Berberislycium was described in 1837 by John Forbes Royle. Berberidaceae is a heterogeneous assemblage of angiosperms represented by around 12 genera and 600 species. About 77 species of *Berberis* are reported from India. *Berberislycium* is found throughout the temperate and subtropical regions of the world, is native to India, Nepal, Pakistan and globally distributed in various parts of world. In India, It occurs in sub-tropical and temperate regions from Kashmir to Uttarakhand on the outer

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northern-western Himalayas between altitude ranges of 850 - 3500 metres. The plant possesses wide ecological amplitude and seeds can be grown in sandy, silty or loamy soils. The flowering and fruiting season of *Berberis lycium* is from the month of March-July. The flowers start appearing from the first fortnight of March and ends up to April. The fruits of *Berberis lycium* are relished from the month of June- July. The fruits or berries acquire bright red colour or purplish colour on ripening. The fruits start ripening from the second week of May and continue to do so throughout June. They can be retained on the shrub for a longer period after ripening but fall off soon after the onset of rain so, the fruiting season ends abruptly with the commencement of rain.



Images of *Berberis lyceum* (Indian Barberry) showing Flowers and Fruits

Chemical Constituent

The various chemical constituent of *Berberis lycium* are berberine, berbamine, chinabine, karakoramine, palmatine, balauchistanamine, gilgitine, jhelumine, punjabine, sindamine, chinabine, acetic acid, maleic acid, ascorbic acid (Khare, 2004). The plant contains major alkaloid berberine, which is an isoquinoline alkaloid and umbellitine. Phytochemical screening of water extract of *Berberis lycium* showed the presence of cardiac glycosides, saponins, hydrolysable tannins, and alkaloids (Ahmed et al., 2009). The fruits contain malic, tartaric, citric acids and tannins. Fruits also contain moisture, vitamin A, fiber content, cellulose, hemicelluloses, β carotein, anthocyanins,

phytic acid and phytate phosphorous (Soodet al., 2010). Leaves are abundant in Zinc, Manganese, Iron, Copper, Phosphorous, Potassium, Sodium and Calcium. It was revealed that Zinc, Copper and Sodium were maximum in root, while Manganese, Phosphorous, Calcium in leaves, whereas, Potassium in shoot. Roots of *B. lycium* possess dry matter (61.2%), moisture (20.5%), protein (4.5%), fat (2.6%), sugar (3.5%), fiber (2.5%) and vitamin C (0.3%). Fruits also contain dry matter (62.5%), moisture (12.5%), protein (2.5%), fat (1.8%), sugar (4.5%), fiber (1.5%) and vitamin C (0.8%) in considerable amount. A wide variety of minerals are also documented such as sodium, calcium, sulphur, iron, zinc, vitamin C (Gulfracet al., 2004), copper, lead and manganese.

Pharmacological actions

Many pharmacological plants have been found by traditional use but their introduction to modern therapy needs testing of the compounds by modern research methodology. The various pharmacological effects studied of *Berberis lycium* are as under:

a) Antimicrobial property: *Berberis lycium* is very effective against many micro-organisms especially bacteria and fungi. *Berberis lycium* is used against different bacteria such as *Bacillus subtilis*, *Pseudomonas aeruginosa*, *Bacillus cereus*, *Enterobacteraerogenus*, *Micrococcus luteum*, *Escherichia coli*, *Klebsiella pneumonia*, *Proteus mirabilis*, *Staphylococcus aureus* and *Streptococcus pneumonia*. The hydroalcoholic extract of *Berberis lycium* has been reported to exhibit stronger and broad spectrum effect against bacterial strains as compared to fungal strains (Singh et al., 2007).

b) Anti-diarrheal activity: Berberine reduces smooth muscle contraction, intestinal motility and delays intestinal transit time in humans. It also directly inhibits some *E. coli* and *Vibrio cholerae* enterotoxins significantly (Sack, 1982). In-vitro study has shown that berberine sulphate inhibits bacterial adherences to mucosal or epithelial surfaces, which is the first step in the infective process.

c) Antioxidant properties: Reactive oxygen species (ROS) such as $\cdot\text{OH}$ (hydroxyl radical), hydrogen peroxide and superoxide anion are known for their potential of causing diseases like Rheumatoid arthritis, Inflammation, Cancer, Aging and Atherosclerosis. The root extract of *Berberis lycium* is known for antioxidant properties and strong reduction potential. Root extract converts potassium ferricyanide (Fe^{3+}) to potassium ferrocyanide (Fe^{2+}), which then reacts with ferric chloride and form a ferric ferrous complex (Gupta et al., 2009).

d) Antiprotozoal activity: The crude extracts of berberine had proven to be more effective than its salts. In a clinical trial, berberine administration improved gastrointestinal symptoms and resulted in a marked reduction *Giardia* positive stools and it was effective at half the dose of the popular *Giardiasis* medication, metronidazole (Choudhary et al., 1972)

e) Anti-diabetic effect: The extract of the root bark of *Berberis lycium* is known to produce anti-diabetic effects on the rabbits and helps in reducing blood glucose level (Ahmed et al., 2009). The alkaloid or hydrolysable tannin

or both have known to exert antidiabetic effect. The hydrolysable tannins have been known to stimulate glucose utilization (Xueqing *et al.*, 2005). The berberine a tetra quinolineisoalkaloid present in *Berberis lycium* has also show antidiabetic effect (Gulfrazet *et al.*, 2008). It has shown hypoglycemic activity in streptozotocin-nicotinamide induced Type II diabetic rats by an extrapancreatic mechanism (Punithaet *et al.*, 2006).

f) Anti-hyperlipidemic effect: *Berberis lycium* root bark powder significantly reduces the total cholesterol and triglyceride and Low density lipoproteins (LDL) of treated rabbits as compared to untreated diabetic rabbits (Ahmed *et al.*, 2009). Diabetic patients are more prone to atheromatous complications such as ischemic heart disease (Way *et al.*, 2001). This is due to the decrease of High-density lipoprotein (HDL) levels in diabetic patients that ultimately lead to atheromatous disease (Rang *et al.*, 2003). It was found that treatment with *Berberis lycium* root causes an increase in HDL and decrease in LDL levels that probably prevent the diabetic patients from developing heart diseases. Repeated administration of plant root bark powder thus had a beneficial effect on the hyperlipidemia associated with hyperglycemia. The role of *Berberis lycium* in reducing serum cholesterol in broilers has also been proved. The dose of 0, 0.5, 1.0, 1.5, 2.0 and 2.5% of *Berberis lycium* root extract was fed to broiler chicks, average serum total cholesterol, triglyceride, high density lipoprotein (HDL) and low density lipoprotein (LDL) were used as criteria of response. It has been found that *Berberis lycium* significantly help in lowering the LDL, serum total cholesterol and triglycerides and help in increasing HDL level (Chand *et al.*, 2007).

g) Hepatoprotective effect: *Berberis lycium* have shown hepato-protective effect also. *Berberis lycium* in combination with *Galium aparine* and *Pistacia tegerima* have shown this effect in rats treated with carbon tetrachloride. The results of this study indicates that a mixture of *Berberis lycium*, *Galium aparine* and *Pistacia tegerima* have hepatoprotective effects. These medicinal plants have more effect as curative agents rather than preventive agents (Khan *et al.*, 2008). To estimate potential hepatoprotective effect of *Berberis lycium*, methanolic extract of crude powder were used. Hepatotoxicity was induced by giving paracetamol to the rabbits. Results showed that plant considerably decreased the elevated levels of serum glutamic oxaloacetic transaminase, serum glutamic pyruvic transaminase and alkaline phosphatase enzymes in hepatotoxic rabbits (Ahmad *et al.*, 2008).

Conclusion

Berberis lycium is a multi-potential plant with vast medicinal properties. The nutritional properties such as high content of vitamins, minerals and anthocyanin have added to its value. These plants are hardy in nature and do not require chemicals or pesticides and are ecofriendly. Hence there is a need to explore its beneficial effects, it can prove to be a good alternate source of feed additive for poultry production.

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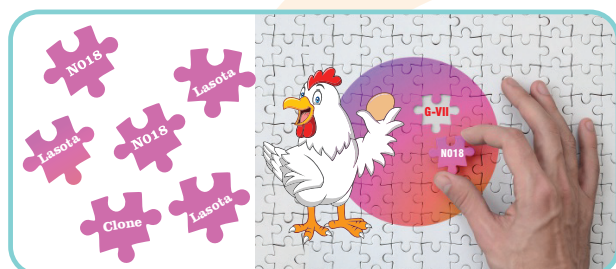
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