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TEL. OFF: 011-24694539, RES: 011-24617837
E-mail : ppunch@ rediffmail.com,
ppunch25@gmail.com
Web : www.thepoultrypunch.com

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EDITORIAL

PRESENT GOVT POLICY AND POULTRY FUTURE

In most of the states poultry has been included in the agriculture sector, so the poultry entrepreneurs in these days enjoy all the benefits assigned to the agriculture sector. Apart from this, the present Indian Government has chalked out a plan to double the income of the farmers by 2022 and a special emphasis has been laid to achieve this mission.

Well it an accepted fact that agriculture alone can't achieve this target but the support of animal husbandry sector can make this possible. The animal husbandry sector comprises dairy animals, poultry, goat and pig farming, fisheries and aquaculture.

In the recent years the animal husbandry sector is the fastest developing sector and makes a significant contribution to the agriculture sector and also to the Indian Gross Domestic Product. Poultry has emerged as the fastest growing sector because of its massive acceptance in the Indian society and also considered as a preferred non vegetarian diet for all occasion.

The tremendous popularity of poultry in India can be attributed to the changing value systems in the Indian society, increase in the per capita income in the recent times, availability of value added processed poultry products and overall acceptance for the quality taste of poultry products.

With a well defined integration in poultry, diversified expansion of markets, quality standardization of poultry products have way for the phenomenal rise of poultry consumption against all its competitors in the market. In due course of revival and development of agriculture sector, the poultry sector too is there to benefit a lot by establishment of more farms across India in near future.

—Editor

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

Thanks
B.S. RANA
25, Thyag Raj Nagar Market, New Delhi – 110003 - INDIA
Phone: 011 24694539, 24617837 Mobile: +919312700599
Email: ppunch@rediffmail .com / poultrymanch@gmail.com
Website - www.thepoultrypunch.com

CLFMA SYMPOSIUM DELIBERATES "INDIAN LIVESTOCK FARMING

Prospects & Role of Government Policies" for the benefit of Livestock Industry

Addressing the occasion Mr.S.V.Bhave, Chairman CLFMA OF INDIA said that the Government has recognized the unexposed potential of Livestock Sector and created a separate dedicated Ministry for Fisheries, Animal Husbandry and Dairying and since livestock sector has its own parent ministry now it will be an easy process for all the stakeholders to resolve the issues and problems.He thanked the government for taking this transformative step.

■ **Delhi**

CLFMA of India, the apex organization and the voice of the country's dynamic livestock sectorconducted its annual flagship event,61st National Symposium in a grand manner on 22nd- 23rdAugust, 2019 at Hotel Le Meridien, Windsor Place Janpath, New Delhi. The event focused on the Theme "Indian Livestock Farming: Prospects & Role of Government Policies" that will foster sustainable growth for Indian Livestock Sector.

The Chief Guest of the Seminar was Shri Giriraj Singh, Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying, Government of India. Shri. Pawan Agarwal, CEO, Food Safety and Standards Authority of India (FSSAI), Government of India, presented the keynote address and Shri. Atul Chaturvedi, Secretary, Department of Animal Husbandry and Dairying, Government of India gave the Thematic Address.

The Symposium started with a Special Session in the morning on Aug 22, 2019 forwelcoming Shri. Giriraj Singh, Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying, Government of India,as the Minister had some urgent engagement in his constituency. The Honourable Minister launched the book "Nutritional Guidelines for Animal Feeds By CLFMA". This is a pioneering effort made by CLFMA to keep the farmers, feed manufacturers and Industry abreast with latest nutrient requirements of various types of species used in animal agriculture.

The Inaugural Session started with the welcome address of Mr. Divya Kumar Gulati, Secretary CLFMA OF INDIA. Mr. Gulati mentioned that the livestock sector is becoming a sunrise sector and all the stake holders including the government have to work in close co-ordination and emphasised the fact that doubling farmers income can be achieved by focussing more on livestock farming.He said that the Symposium is being organized to build partnership with the government to take forward the agenda of doubling farmers' income through livestock farming.

This was followed by the lamp lighting ceremony

Addressing the occasion Mr.S.V.Bhave, Chairman CLFMA OF INDIA said that the Government has recognized the unexposed potential of Livestock Sector and created a separate dedicated Ministry for Fisheries, Animal Husbandry and Dairying and since livestock sector has its own parent ministry now it will be an easy process for all the stakeholders to resolve the issues and problems.He thanked the government for taking this transformative step.

Shri Giriraj Singh in his speech appreciated CLFMA OF INDIA for conducting the event and said that the ministry is involved in making a model for the livestock sector, which will work on co-existence of all the species including the humans involved in the food chain, Promote Scientific technologies and Integrated Farming Systems. He emphasized that QPM maize,moringa,Bajra and Cassia should be promoted as animal feed as the protein percentages is more in these feeds and can be produced by Indian farmers.He also insisted in starting livelihood incubation centres for livestock. He insisted in promoting few practices that will benefit the farmer viz merino sheep which will be useful for dual purpose (meat and wool) and promotion of Goat Farming.

Delivering the Thematic Address at the Symposium Shri.

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Atul Chaturvedi,Secretary, Department of Animal Husbandry and Dairying, Government of India said that Apart from the Doubling Farmers' Income the Hon'ble Prime Minister of India had the vision of 5 trillion economy and the sectoral allocations were 3 trillion to service sector, 1 trillion to manufacturing and one trillion to agriculture.Presently, Agriculture contributes to 270 to 280 billion and to take it to 1 trillion mark in near future, we need to focus on Animal Husbandry, Dairying & Fisheries. He said that breeding techniques, compound livestock feed or nutrition of fortified foods, Control of diseases especially FMD and Brucellosis play an important role to increase productivity of animals. He also emphasized the fact of promoting processing, marketing and exports of value-added products.

Shri Pawan Agarwal,CEO, Food Safety and Standards Authority of India (FSSAI), Government of India delivered the Keynote Address. He emphasised the importance of Food Safety in the Country and FSSAI will be stringent about food safety concerns so that safe food is available in our country.He said that FSSAI will be working with Ministries and Agencies, who are responsible for primary productionand safety regulations will be started at this level itself, as it is difficult to remove the contamination occurring in the primary producing stages while processing.

This was followed by the CLFMA Award Ceremony. The Life Time Achievement award was presented to Mr. P. S. Nandakumar, MD, Nanda Feeds Pvt. Ltd. CLFMA Awards were presented to Dr. Ashish Motiram Paturkar, Hon'ble Vice-Chancellor, Maharashtra Animal &Fishery Sciences University, Nagpur, DrAshok Kumar, ADG- ICAR and Dr. Raghavendra Bhatta, Director, ICAR-National Institute of Animal Nutrition and Physiology, Bengaluru for their marvellous contribution to the Indian Livestock Sector.

The vote of thanks was proposed by Mr. Neeraj Kumar Srivastava, Dy. Chairman, CLFMA OF INDIA.

The Second day Symposium started with the Welcome Address by Mr. Naveen Pasuparthy, Treasurer, CLFMA OF INDIA.

The First session was titled "Doubling Farmers' Income: Government and Industry Partnership". Mr. Balram Singh Yadav, Managing Director of Godrej Agrovet Ltd was the moderator of the 1st Session. The 1st Session's Panellists from the Government of India, were Shri.Tarun Shridhar, IAS(Retd.) Former Secretary, Department of Animal Husbandry and Dairying (AH&D), Shri. Sagar Mehra, Joint Secretary, Department of Fisheries, Ministry of Fisheries & Panellist from the Industry side were ,Mr.Daljit Singh, Chairman, Progressive Dairy Farmer's Association (PDFA), represented the Dairy Industry, Mr.Ravi Kumar Yelanki, Managing Director, Vaishaki Bio Resources &Vaishaki Bio Marine, represented the Fishery Industry & Mr. B. Soundararajan, Managing Director of Suguna Holdings Pvt. Ltd. and immediate past chairman of CLFMA, represented the Poultry Industry. In the 1st Session, the problems faced by the Fisheries, Dairy and Poultry Industry, existing Government Schemes were discussed in detail and recommendations were drawn.

During the Second Session "Value Addition with Special Focus on Processing" was discussed in detail.The Session Moderator was Mr. Narayanan, Advisor – Food and Beverage. The 2nd Session's Panellist from the Government of India were Shri. J. P. Meena, IAS(Retd.) Former Secretary, Ministry of Food Processing Industries (MOFPI), Dr. Amit Sharma, Director, Food Safety and Standards Authority of India (FSSAI), Shri.Tarun Bajaj, General Manager at Ministry of Commerce (APEDA)& from the Industry side Mr. Vishwas Chitale, Executive Director, Chitale Agro Industries Pvt. Ltd. represented Dairy Industry, Mr. Ravi Kumar Yelanki, Managing Director, Vaishaki Bio Resources &Vaishaki Bio Marine represented Fishery Industry &Mr. Prashant Vatkar, CEO of Godrej Tyson Foods Ltd. represented Poultry Industry. The Second Session deliberated the importance of Food processing in doubling farmers income, addressing the traceability issues, reduction of food wastage and Food safety Issues, promotion of Export Markets etc. were discussed in detail.

The Third Session Moderator was Mr. Bharat Tandon, Past Chairman of CLFMA & Managing Director of Healthline Pvt. Ltd. (Sericare Divison). From the Government of India the Panellists were Shri. Dr. O.P. Chaudhary, Joint Secretary (NLM), Dept. of National Livestock Mission, Ministry of Fisheries, AH&D, Shri. G. N. Singh, Joint Secretary – Trade, Department of Fishery, AH&D & Shri. Keshav Chandra, Joint Secretary, Department of Commerce, Ministry of Commerce and Industry and from CLFMA Team Mr. S.V. Bhave, Chairman, Mr. Divya Kumar Gulati, Secretary, Mr. Naveen Pasuparthy, Treasurer and Mr.Suresh Deora, West Zone President. The Third Session was on Livestock Industry Interaction with Government of India. In this session, the Industry Pain Points were discussed with the Government.

Valedictory Session was proposed by Shri.Tarun Shridhar, IAS(Retd.) Former Secretary, Department of Animal Husbandry and Dairying (AH & D), Ministry of Fisheries, AH&D followed by Felicitation to all Sponsors, Media, Guests and Invitees.

The vote of thanks was proposed by Mr. Suresh Deora, President – West Zone.

HATCHTECH AND PAS REFORM SIGN PATENT LICENCE AGREEMENT

HatchTech, a global provider of incubation technology, and Pas Reform, a global supplier of integrated hatchery solutions, announced today that they have entered into a long-term global strategic patent agreement covering post-hatch earlyfeeding for day-oldchicks.

Significant academic research has been undertakenworldwide intothe digestion and feed absorption processes of young chicks, and the role of post-hatch feeding. Buildingon the outcome of these studies, the HatchTech R&D team initiated research and testing around early feeding, becomingapatent holder for early-feeding solutions for day-old chicks. Based on this knowhow andits commitment to finding innovations beyond the tried and tested, HatchTech launched HatchCare in 2014.Thehatcher provides newly hatched chicks with the basic necessities of life – feed, fresh water, light and fresh air – right from birth.

In 2018, PasReform launched SmartStart™, a post-hatch feeding solution which providesnewly hatched chicks with nutrition and hydration in asingle formulation.SmartStart™ helps customers to implement post-hatch feeding easily and flexibly. It comprises two key elements – which can be applied individually, or together: precision feeding and intelligent lighting.

"After years of innovating and a successful market adoption of HatchCare, it is great to see other incubation technology providersacknowledgingthe benefits of early feeding," says Tjitze Meter, Founder and CEO of HatchTech.

"After years of innovating and a successful market adoption of HatchCare, it is great to see other incubation technology providersacknowledgingthe benefits of early feeding," says Tjitze Meter, Founder and CEO of HatchTech. "We firmly believe that early feedingcan bea keydriver of animal-friendly and antibiotic-free poultry production, and this patent licence agreement will help the poultry industry going forward."

"This is a clear win-win agreement, which will benefit our customers", saysHarm Langen, CEO of PasReform. "It underlines the importance of early feeding for the production of robust day-old chicks, and promotes the worldwide growth potential of this innovative concept. The agreement gives both companies the freedom to further develop and market their post-hatch feeding solutions." The agreement is with immediate effect.

Tjitze Meter HatchTech and Harm Langen PasReform

VENKY'S CONDUCTS SEMINAR ON BREEDER NUTRITION FOR CHICK'S QUALITY AND BROILER PERFORMANCE AT BENGALURU

■ **Bengaluru**

After the successful technical seminar of Dr. Douglas in Pune, Venky's extended similar event in Bengaluru on 22nd August, 2019 on Breeder nutrition for Chicks quality and broiler performance.

In his presentation he showed the importance of protein and fat nutrition and its effect on the production performance and chick quality.

Douglas recommended that low protein diets during rearing period must be provided with an everyday feeding. The skip a day program is not recommendable because they use the body fat during the fasting days.

He stated that certain amount of body fats are necessary at the onset of lay in order to achieve maximal performance, while increasing body fat at the onset of lay decreases embryonic mortality.

B V BIO CORP introduced the poultry trace minerals new product category as BB Classic – Organic Tracemin. This is the organic trace mineral for the Broiler Breeders. The most bio-available form of the trace minerals.

VENKYS CONDUCTS TECHNICAL SEMINARS ON BROILER BREEDER NUTRITION AT PUNE

■ Pune

Dr. Douglas Zaviezo, Technical Consultant, SPECIAL NUTRIENTS Inc, Miami, USA was the resource person at both the seminars. The primary objective of the seminar was to educate and spread awareness about the importance of organic minerals in poultry nutrition and its prejudicial use to improve the production performances

Venkys' (India) Ltd, conducted a Technical Seminar at Pune on "Advantages of organic minerals in today's situation" on 20nd August, 2019.

During the speech at Pune, Dr. Douglas Zaviezo, Technical Consultant, SPECIAL NUTRIENTS Inc, Miami, USA provided the insight on the organic minerals and their effect on poultry production Worldwide. The seminar was attended by the Broiler Farmers, Layer Farmers, Broiler Breeders as well as feed millers and technical consultant.

Dr. H. G. Murade, DGM-Sales, Venkys (India) Ltd, provided the outline and objective of technical seminar.

Mr. Deepak Khosla General Manager -Marketing, Venkys (India) Ltd, introduced Dr. Douglas Zaviezo and welcomed all the guests, poultry farmers, feed millers and technical consultants.

During the presentation, Douglas elaborated the detail facts about various mineral complexes and its bioavailability in breeders, layers and broilers. He stated that, Zinc-Manganese-Copper in breeder diets used in their organic form as amino acid complex or chelate, have shown a positive effect on the progeny. Also, organic trace minerals are free from heavy metals and pesticide contamination.

He stated that, the most effective OTM are the complex (mineral attached to an amino acid) and the amino acid or MHA chelates.

During his presentation, he provided detailed technical information on the effect of organic trace minerals in breeder diets on concentration in egg yolk, on progeny bone thickness and on eggshell quality.

Dr. Douglas attracted the audience very much when he shared his rich

experience and knowledge of organic mineral nutrition and suggested to use the specific ratios of usage of inorganic and organic minerals for breeders, layers and broilers, which will help the farmers and feed millers in a great way.

Dr. Douglas stated that the broiler performance has been improved by using OTM in birds raised in areas with permanent litter problems, and birds with damages in the foot pad (dermatitis). OTM can also improve broilers with leg problems, skin scratches, cellulitis and consequently carcass quality. There is some research showing a better immune response and better performance of stressed broilers when the diet was supplemented with OTM.

He also discussed about on the use of OTM as full or partial replacement for Inorganic Trace Minerals. Organic Trace Minerals in Breeders improves egg quality, fertility and hatchability along with improvement in the quality of progeny and its performance. In commercial Broilers and Layers, Organic Trace Minerals improve skin, bones, foot pad quality and egg shell quality respectively.

Also he gave some tips to the audience about how to take the economical decisions of using the inorganic and organic minerals while doing the formulation

At the end, Douglas interacted with the farmers.

Dr. H. G. Murade finally delivered the vote of thanks and the session concluded with the cocktail dinner.

THE ALLTECH 37+® LABORATORY HAS ADDED FIVE NEW MYCOTOXINS TO THEIR PANEL

Alternariol was previously included in the Penicilliums group on the 37+ report, but it is more correctly located in the emerging mycotoxins category. Alternariol is produced by Alternaria species of fungi. This mycotoxin can be cytotoxic, cause DNA damage and result in cell death for many cell types, including those of the intestinal tract. Alternariol has been shown to have estrogenic potential as it can bind to estrogen receptors alpha and beta.

■ Bangalore

This brings the total number of detectable mycotoxins that can be tested for to 54! These additional mycotoxins further increase the understanding of mycotoxin occurrence and risk to animal performance.

Emerging Mycotoxins

The new mycotoxin additions fall into our category of emerging mycotoxins. The term emerging mycotoxins refers to mycotoxins that are neither routinely analyzed or legislatively regulated, but recently research has shown more evidence of their increasing incidence and potential toxicity to animals. Now, the emerging mycotoxins analyzed by Alltech 37+ include beauverivin, moniliformin, enniantins A/A1 and B/B1, phomopsin A and alternariol. Fusaric acid is also included in this emerging mycotoxin category.

Enniatins

Enniatins are a group of mycotoxins produced by several different Fusarium species. There are currently 29 different known forms, but the A and B forms are most common (Gruber-Dorninger et al., 2016). Enniatins have a range of biological activities including their function as ionophores and antibiotics. These mycotoxins have shown to be cytotoxic to different cell types and cause cell death. Research has shown that the intestine and liver may be primary organ systems impacted by these mycotoxins. Additionally, enniatins are lipophilic and may bioaccumulate in animal tissues and products.

Phomopsin A

Phomopsins are a family of mycotoxins produced by fungal species that are pathogens of lupins (Battilani et al., 2011) and cause the disease lupinosis. Phomopsin is a potent microtubule inhibitor and can impact cell function and cause cell damage and death. Generally, the liver is the principle target of this mycotoxin, leading to liver failure and death of the animal. Animal sensitivity varies by species and age. Sheep appear to be significantly more sensitive than other species, although horses, pigs and other ruminants may certainly be sensitive as well. Clinical signs of intoxication can include anorexia, jaundice, ketosis, stumbling gait, liver damage and death. Phomopsin is very stable during feed processing.

Alternariol moved to emerging mycotoxins category

Alternariol was previously included in the Penicilliums group on the 37+ report, but it is more correctly located in the emerging mycotoxins category. Alternariol is produced by Alternaria species of fungi. This mycotoxin can be cytotoxic, cause DNA damage and result in cell death for many cell types, including those of the intestinal tract. Alternariol has been shown to have estrogenic potential as it can bind to estrogen receptors alpha and beta. It is less active than estrogen or zearalenone, but it can still result in estrogenic functions as well, as it may act in a synergistic way with zearalenone to alter reproductive performance

EGG TRADERS STAGE PROTEST AT GORAKHPUR DM OFFICE

■ **Gorakhpur:**

In context of egg producers, the egg traders presented an application addressed to the Chief Minister to the District Magistrate and asked for immediate solution to the problem. They stated that the cost of egg production is more than the market price, so the egg producers are on the verge of bankruptcy.

They complained that the egg price today is same as those of the previous year but the feed price has escalated. The complained that the market rate of maize and soya has increased a lot and the layer farmers are facing scarcity of funds. They said that at present the production cost of egg is pegged at Rs 4.25 which includes feed, electricity, loan installment and medicines. The layer farmers are forced to sell their eggs at the rate of Rs 3.25 since March 2019.

So if the layer farmer has a farm of 10,000 birds, then the loss is Rs 9,000 per day. This means that the loss per month is Rs 2,70,000 and the farmer is on the brink of committing suicide. They urged the state government to regulate the egg price in Uttar Pradesh and introduce egg in the mid day meal scheme.

KEMIN'S TRIPLE CHECK ON GUT HEALTH SOLUTION IN KATHMANDU, NARAYANGHAT AND ITAHARI – NEPAL

Kemin organized series of workshops on holistic approach for Gut Health Solution across Nepal as per the changing needs of the poultry industry in the Himalayan Nation.

Kathmandu, Nepal:

Kemin Industries, a global leader in developing feed ingredients for animal nutrition and health, organized series of workshops across Nepal on 'Holistic Approach for Gut Health Solution'.The workshops took place in Kathmandu, Narayanghat and Itahari.

The increasing awareness towards safe, quality and affordable protein for consumption are imposing more and more pressure on the feed and poultry producers. While the usage of AGPs (Antibiotic Growth Promoters) are already restricted in the country, the efficient gut health management, economical poultry and egg production are becoming the prime criteria for the nation.

Dr. Bayjut Bostami, Zonal Sales Manager – Nepal inaugurated the workshop with his warm welcome note and shared Kemin's new vision and logo. He also emphasized on how Kemin focus to continue the customer services, adding value to customers' business and on a larger perspective towards the vision.

Further discussion led to thegut health scenario in South Asia and Nepal, approaches for an efficient management by Dr. Venket M. Shelke; Technical Expert for Health – South Asia, Kemin Industries South Asia Pvt Ltd.

In the South Asian region especially Nepal, where the poultry producers gave away the usage of Antibiotic Growth Promoters (AGPs) got addressed with various approaches for animal health management while sustaining the economic efficiency. The challenge is to balance the healthiness as well as profitability for the sustainable business operation.

Dr. Chandrasekar S, Marketing Manager introduced the "Triple Check" approach, from feed to farm emphasizing on strengthening the gut health of animals using our unique solutions - CLOSTAT™, AcidLAC™ Supreme, ButiPEARL™& Aleta™.

Usage of second-generation probiotics (CLOSTAT™) along with acidifiers in combination with phytobiotics (AcidLAC Supreme), cutting-edge immunomodulators from algal sources (Aleta™) and in combination with sustained release energy source for gut integrity (ButiPEARL™) would provide enhanced gut functions and animal performance, Chandrasekar added. He also emphasized on the novel findings of the solutions and ideal criteria to choose efficient gut health additives. Overall the level of energy and enthusiasm of the participants were incredible, and we look forward to seeing more of you at our upcoming events.

IPJA'S WHIRLWIND SEMINAR SERIES

MAKES AN IMPRESSIVE IMPACT IN BHUBANESWAR

Dr Rajesh Kumar

Dr Rao lights the Inaugural Lamp as Mr BS Rana and Mr KG Anand look on

■ **Bhubaneswar**

Indian Poultry Journalists Association (IPJA) since last few years has been on a Technical Seminar organizing spree with its latest one being organized in Bhubaneswar. This was organized on August 17, 2019 at Hotel Hindustan International, Bhubaneswar. The seminar began with offering bouquet to the dignitaries on the dais. More than 600 poultry farmers had assembled to benefit from this seminar.

Mr BS Rana, President – IPJA delivered the welcome address and thanked all the dignitaries and the assembled gathering to have found time to make to the venue.

Mr Rana said that Odisha is a land of powerful emperors and marvelous temples. In Bhubaneswar alone, there are more than 500 huge artistic temples. The sacred Jagannath temple in Puri, Lingaraja temple in Bhubaneswar and Konark temple is an epitome of architectural excellence and tourist attraction across the globe.

Against the national per capita egg consumption of 182, Odisha stands at sheer 55. The rural based traditional system, contributes 60% of the total poultry population, consumed mostly by the rural area. It supplies nearly 10% to the urban areas. In the past two years of 2017 and 2018, the layer industry in Odisha expanded from 15% to 25% with 70 lakh layers. The reason for such a development, was due to cheap land and labour, plenty of water and the declining income from direct agriculture. It is interesting to note, that once being an egg consuming state, it has now become egg producing state.

Odisha has declared poultry in the agriculture sector. Odisha promotes poultry by: reduction in electric tariffs, reimbursement of VAT on maize and broken rice, supply of eggs in mid day meal scheme at schools. There is a vast scope for the rise of poultry sector in future in the state. Increased poultry production, will also solve the malnutrition problem and generate employment in the state.

IPJA is an association of Poultry journalists

Mr KG Anand receives bouquet from Mr BS Rana

Mr BS Rana welcomes the audience

5 Mr KG Anand explains a point

but our mission is only one: development and benefit of the poultry farmers. We wish to attain this, on all costs. I proudly state that, IPJA has been conducting series of technical seminars across India and received great appreciation from the poultry fraternity for this noble cause. During each seminar, we also awarded exceptional performers and contributors, to our Indian poultry industry.

I feel delighted to declare that after extensive survey, we came to the conclusion, that Bhubaneswar and its adjoining belt, have a great potential for expansion in poultry production and business. My friends, believe me, it is the right time now for a changeover from Backyard poultry farming to intensive integrated poultry farming in this region.

As you all know, that more than 70 per cent of the expense in poultry production is made on feed. So if the feed and cheap manpower availability is there, nothing can stop the rapid advance of poultry production and development in this region.

It is a fact, that backyard poultry farming cannot be considered profitable these days. Presently, poultry production process includes: high-tech layer and broiler breeds, age oriented feed formulations, highly researched medications, sophisticated and ambient living conditions like environmentally controlled houses and a lot more. Moreover, as the experts have assessed, that with a lot of poultry farms under the integration system, very little scope remains for the backyard poultry output.

So, it is high time, that out our poultry farmers adapt the latest poultry production techniques, and enhance their production as well as profit margin. We have roped in, the best poultry experts as speakers, who will change your thinking. I hope the assembled gathering at this session, will make the best use of information from this seminar. During the course of the seminar, the delegates are free to get their doubts cleared from the poultry experts.

It is our promise, that we shall continue organizing such technical poultry seminars for farmers, till they reach the stage of well informed self sufficiency. There is a lot of scope in poultry business. I want to inform all the delegates present here that by adopting latest knowledge skills, equipments and medication they too can earn enough, and provide employment to the local population of this area. This will also ensure that Odisha becomes self sufficient in poultry production, and meet the demand of the local consumers.

Dr Vidyasagar Punja spoke on "Commercial Layer Management." He said that a lot of factors need to be taken care of to ensure that the layer bird gives maximum output. A poultry farmer should always be vigilant to the needs of the birds and provide the best of facilities in terms of nutrition, medication, watering systems, environmental control, biosecurity management, bird disposal, litter management and a lot more.

He said the poultry farmer should separately rear age-wise flock of birds. The feed should also be administered keeping in mind the prevailing climatic condition and the age of layer birds. Biosecurity is an important factor and should strictly be taken care of within the entire farm premises. Most of the problems faced at the farms are due to compromised biosecurity application. He spoke on- Breed Selection, Terminal Disinfection, Chicken Anaemia Virus, Stock Density, Grower Management Goals, Lighting Program, Pre Layer Diet, Controlling Feed Cost, Calcium Requirement, Feeding Time, Water Qualityand Water Disinfection With Acidification,

Mr Ashok Mishra spoke on –"Poultry Litter Management Essentials." He said "Poultry litter

is a clear indicator of the health status of the bird." He lay emphasis on- Characteristics of bedding material, Factors effecting litter quality, Composition of poultry Litter. He said Biomin lays stress on litter managerment in the following ways- 1.Water quality management, 2. Effective feed utilization, 3.Gut health protection. He discussed the efficacy of - 1. Biotronic® Top Liquid, 2. Digestarom® DC, 3.PoultryStar.

Dr Thamothran NABARD

Mr Shirish Dhopeshwar soke on- "Poultry waste management." He said poultry waste includes: 1. Layer Manure 2. Broiler Breeder Manure 3. Hatchery Waste, 4. Slaughter Waste and 5. Chicken Fat. He said Poultry waste Management is one of the most neglected area in poultry sector and waste is prevalent across the entire spectrum like– Layer farms, Hatcheries, Slaughter plants etc.

Mr Shirish Dhopeshwar

He stated that waste was neglected because it was possible to neglect till now but the new rules do not allow such neglect any more. He said it is creating pollution and nuisance and is affecting main activity of people. He said this poultry waste can give us: a saleable product on processing and will earn additional profit. He stated that the new - DIGESTOR based technology converts fresh wet manure into dry baggable powder or pellet on the same day. He highlighted the various models and its application in-layer farm, broiler farm, processing plant and a lot more.

Dr Anand Khandwekar spoke on- "Role of gut health in improving growth and productivity." He said the gut status is the basic platform that decides the performance of the birds. He said excellent gut health cannot be achieved that easily and the poultry farmer has to exert a lot to achieve that state. He said gut health is directly related to FCR and digestibility of the bird. He said if the gut health is adequately maintained then the bird productivity is at its optimum level. He said to ensure the best gut health, the veterinarian at the farm has to administer feed additives along with the feed to really make it happen.

Dr Roopam Borah

Dr Roopam Borah spoke on- "How to get best performance in commercial broiler." Dr Borah laid a lot of emphasis on the nutrition, FCR and biosecurity to get the best performance from a commercial broiler. He said if the bird

Dr Rajesh Kumar being honoured by IPJA team

IPJA team honours Dr Rao

Dr Jaiswal, ABTL receives memento from BS Rana

Mr KG Anand felicitated at the Seminar with Dr Rao

is in the best health conditions, naturally the performance will be the best. He said the productivity from any livestock sector entirely depends on the efficient management of the animals. He said the broiler meat is in great demand these days and the Indian customers are expecting more value addition in it. He said a veterinary expert should regularly inspect the farm to ascertain the hygiene status of the birds and in case of infection should fast track the treatment process.

The vote of thanks was delivered by Mr Shashank Purohit, who thanked all the dignitaries, speakers, sponsors and the hotel management for successful conduction of the seminar. The assembled gathering was then invited to lunch and thus ended a very successful Technical Seminar organized by IPJA.

AVIAGEN BROILER BREEDER

GIVES GROWERS ROCK-SOLID FOUNDATION, FEATURED AT KERALA CHICKEN STONE-LAYING SEMINAR

Mohan Ramraj explains why 308 AP is the best breed for Kerala

■ **Udumalpet**

To commemorate the introduction of three E.C. Parent Stock farms in Kerala, India, the Kerala government hosted a "Stone-Laying" ceremony on July 23. The ceremony featured broiler breeders known locally at 308 AP, which benefit growers in Kerala with their feed efficiency, healthy growth rate and environmental resistance.

The three farms will begin operation in early 2020, and each will have a production capacity of 10,000 parent stock per year.

Addressing an audience of more than 500 broiler farmers – a significant number being women entrepreneurs -- Mohan Ramraj, Aviagen India Commercial Manager, Southern Region, spoke on the exceptional performance of the 308 AP broiler. After presenting a corporate video introducing Aviagen as a company, Mohan discussed with attendees key management points for getting chicks off to a good start and maximizing the performance, health and welfare of 308 AP flocks. Mohan was assisted by M.A. Sumesh, who provided translation into the local Malayalam language.

Kerala – a story of growing independence and success

The event was designed to encourage the development of an indigenous poultry industry in Kerala that is less reliant upon imports, thus reducing the trade deficit and creating more jobs.

Paul Gittins, Senior Advisor for Aviagen India, offered an explanation for the state's rising self-sufficiency in poultry production. "Kerala takes extensive steps to support its poultry farmers and to make entering the business economically attractive for start-ups. Similarly, Aviagen is also committed to the success of producers in Kerala and throughout India, and considers education in poultry husbandry and practices the key to future progress. We share the latest knowledge, and work collaboratively to help growers improve on past successes. We appreciate all Kerala has done for poultry farming and offer our full support for continued development."

The right bird for Indian market

Known in India simply as the 308 AP, the Ross 308 AP has rapidly gained market share throughout Latin America and the US, with its healthy growth rate, good chick numbers, high meat yield and all-weather robustness – qualities that are also essential for farmers in the Indian market and that enable the broiler breeder to continue to grow in popularity throughout India.

Institution of Veterinarians of Poultry Industry

ANNUAL SCIENTIFIC PROGRAM 2019

INDIAN POULTRY 2.0

LEARN UNLEARN RELEARN

Institution of Veterinarians of Poultry Industry (IVPI) conducted its Annual Scientific Program 2019 (ASP) on 14th August at Conrad Hotel, Bengaluru. The theme of this year's ASP was "Indian Poultry 2.0: Learn, Unlearn and Relearn" focusing on the Challenges of Poultry Industry and The Way Forward in alignment with BioSecurity, Health, Welfare, Environment & Consumer Needs.

The President of IVPI, Prof G Devegowda welcomed all the Veterinarians, Speakers & Poultry Entrepreneurs and introduced the Theme of the Technical Program to the audience. Mr. Chinnaraj, Poultry Farmer, Businessman & Member of Parliament from Namakkal was felicitated on this occasion.

First Speaker, Mr. Suresh Chitturi, MD & Vice Chairman, Srinivasa Farms spoke about the Importance of Poultry Industry in the Indian Economy. He highlighted the Potential of Poultry in reducing malnutrition among young children, providing employment generation, developing Solar energy, harvesting water and Biogas production at the farm level etc.

Second Speaker, Mr. Abhay Hanjura, CEO of LICIOUS, discussed in detail about the Innovative & Technology driven marketing and sales model for chicken, meat and sea food. He highlighted the potential of huge opportunity for the other Poultry Entrepreneurs to focus in the e-commerce segment for chicken retailing.



IVPI's Lifetime Achievement Award for the year 2019 was awarded to Dr. Puttanniah, a renowned Pathologist and one of the founder member of IVPI.

Third Speaker, Dr.Benoit Pele from Hendrix Genetics spoke about the status of Egg Industry in Asia and the opportunities in the future. He highlighted the enormous health benefits from Egg consumption & insisted to include eggs in the school meal programs across India.


Dr. Ravikiran compered the entire program and Dr. Prakash Satihal gave Vote of Thanks followed by chanting National Anthem. The IVPI-ASP 2019 ended on a high note followed by networking dinner.



APPF REQUESTS INDIAN GOVT TO SUPPORT POULTRY IN CRISIS

India is world's 3rd largest egg producing and 6th largest meat producing country. With an egg laying bird population of about 5 crores, Andhra Pradesh is India's 2nd largest egg producing state, and with a capacity of about 4 crore broilers, 4th largest poultry meat producing state in the country. In our state about two lakh persons are directly dependent on poultry sector, and another one lakh person are dependent in related sectors like transport etc, Poultry sectors is also helping agriculture farmers, rice millers etc.. by consuming coarse cereal grains, oil seed cakes, rice milling by products etc. Both layer and broiler sectors are presently going through an unprecedented crisis due to unimaginable increase in the price of all feed ingredients. Example of price increase two ingredients is given below. Though A.P. is a predominantly agriculture based state, we are presently importing these ingredients from other states, due to acute shortage in our own state.

Maize Prices, Rs. per Ton			
Month	2017	2018	2019
June	15, 500	14,000	22,000
July	16,000	14,500	23,000
August	16,500	15,500	25,000
De-oiled Rice Bran Prices, Rs. per Ton			
Month	2017	2018	2019
June	11,700	10,550	17,800
July	11,900	10,550	18,200
August	12,200	12,500	20,000
Cost per Kg Feed, Rs. per Kg			
	2017	2018	2019
August	16.75	15.50	24.75

Despite this abnormal increase in the feed prices, which contribute about 70% of the cost of production, prices of eggs and meat birds remind at the same levels as last year, creating a crisis in poultry farming sector. Poultry Farmers cannot survive this unprecedented crisis without the support of State and Central Governments.

Areas where Central Govt Support is needed:

1. Maize shortage: To overcome the shortage of maize, we request the Govt. to allow duty-free import of maize, liberally and promptly. In the meanwhile we request the GOI to allocate wheat and rice from FCI at subsidized prices.

2. Interest Subvention: GOI has incorporated a 2% interest subvention for poultry farmers, but has restricted it to KCC loans. In this hour of need, we request that interest subvention be given to all poultry farms.

3.Poultry compost as organic manure: Poultry litter, with latest composting techniques can be converted into high value organic manure. Government support in the form Market Development Assistance, similar to that of city compost can help in reducing the pollution in poultry and fish farming (poultry manure is used in fish ponds for plankton growth) and also help in reducing the import bill of chemical fertilizers. Government's vision of Organic farming can also be made a reality.

4. Cage Ban issue: A case, filed by motivated animal welfare groups is pending in Delhi High Court, requesting the ban of cage housing of egg-laying birds. Egg producing farms can't be managed without cages in the present circumstances, as the cost production will be at least twice the present cost, without cages. So, Central Govt. should support continuation of cages.

5. Cultivation of Genetically Modified Crops: Present yield per acre of crops like maize and soybeans in India is less than half of that in countries like US, China, Brazil etc. The reason is these countries are cultivating genetically modified crops, unlike India. If Indian Govt. permits cultivation of genetically modified crops, India can stop importing grains like maize, and vegetable oil crops, thus saving huge foreign exchange.

INFAH HELD ITS 8TH AGM ON 9TH AUGUST 2019 AT MUMBAI

Dr. Arun Atrey Addressing the INFAHMembers

■ **Mumbai**

The 8thAnnual General Body meeting of INFAH was held on 9th August 2019 at Hotel Taj Santacruz, Mumbai. The meeting was attended by more than 80 industry colleagues representing Indian Animal Health & Nutrition Industry.

Indian Federation of Animal Health Companies (INFAH) has a clear vision towards creating trust among Veterinary Professionals, Livestock, Poultry, Companion Animal and Aqua stakeholders, enhancing animal health Industry's value and contribution to society, by setting high standards of competitiveness, ethical business practices, innovation and leadership among its members and ensuring significant presence across the globe.

In the welcome address by Dr. Arun Atrey, Immediate past President-INFAH, expressedthat role of INFAH has become more significant to meet the newer challenges, adopt new culture and practices, be more proactive towards our role in policy making, decisions and overall creating new opportunity for sustainable growth by adopting best professional and ethical practices. INFAH is totally committed to meet the expectations of its members. However, it would need constant encouragement and guidance from all. Dr Atrey welcomed all members and guests to 8th AGM.

Dr.D.K.Dey,President INFAH, welcomed all the members to 8thAGM. He took this opportunity

Dr D.K.Dey Addressing the INFAH Members

to congratulate all the members for being a part of INFAH's journey of the last 7 years which was full of challenges and achievements. With the support of all the members INFAH have been able to create some new milestones that would give a new direction to its future growth. The key challenges which our industry is facing are animalwelfare groups relentless pressure on cage ban impacting layer industry, mixed response from the policy makers on AMR, Issues related toclassification of animal feed supplements by different authorities.

Dr. Vijay Makhija, General Secretary, INFAH, emphasized that the journey of INFAH will always remain challenging due to ever changing regulatory environment and continual demand for cost effective solutions. He applauded the "Passion" of all managing committee and subcommittee members to take INFAH to greater

Dr Vijay Makhija presenting Annual Activity Report

Dr. Y.G deshpande received INFAH Award

heights. He presented the overview of full year activities of INFAH. Some of the key highlights were; participation at One Health conference, synthesis of white paper on feed supplements, contribution towards INFAH members views for the CDSCO's initiative of guidance document on biologicals & therapeutics, providing support during Kerala floods, SOPs on good marketing practices, Initiatives for attracting & retaining talent, representations to government officials for swift imports & exports of animal Health & nutritional products, garnering support for inclusion of Ayurveda in veterinary curriculum and post graduate studies,collaboration with industry associations,IPJA award recognition etc.

During the AGM, an insightful presentation "White Paper on Feed Supplements" was made by Mr. Satish Pasrija (Past President & Chairman Subcommittee on Feed Supplements). In this paper INFAH has comprehensivelycovered variousaspects of feed supplements and engaged all stakeholders for their inputs for the same. INFAH has carried out holistic research by bringing together all inputs required to precisely define status and prevent ambiguity at all levels. This document will be mother document for feed supplements and can form basis for bringing uniformity in understanding and implementation within industry and regulatory bodies

Mr Satish Pasrija sharing insights on the White Paper on Feed Supplements

Dr.B.P.Manjunatha, Chairman of Human Resource Subcommittee, emphasized on

Dr B.P. Manjunatha sharing update on Human_ Resources needs of industry

the need for attracting & retaining talent. Dr Manjunatha also emphasized on good human resource practices which as an Industry we need to adapt and follow. He called for a collective effort of INFAH members in this direction.

Dr. P.G. Phalke (TreasurerINFAH) conducted the AGM proceedings, welcomed the new member Tineta Pharma andannounced the result of newly elected members for the period 2019-21.

Dr P.G. Phalke conducting AGM

During the AGM Mr. Vijay Teng, Vice President- INFAH, addressed the members by ensuring that INFAH is well positioned to shape the environment in Animal Health industry,


Mr Vijay Teng addressing the INFAH Members


Glimpses of AGM

in alignment with changing economic and regulatory scenario. INFAH is well prepared to contribute to the overall growth of India with theobjective of Healthy Animals, Healthier India.Mr. Vijay Teng expressed sincere gratitude towards the immediate & past presidents Dr. Arun Atrey & Mr. Satish Pasrija for their exemplary leadership and periodic guidance to the Managing Committee.

INFAH Managing Committee specially honoured Dr D.K. Dey for his outstanding contribution as President of INFAH for the last two years. Managing Committee also took special effort to recognize contributions of subcommittee members & the respective Chairmen.

During the AGM following insightful presentation were made by Guest Speakers

1) Changing Dynamics of Indian Agri Systemby Mr Ram Kaundinya

2) Evolving Innovation Ecosytem in Agritech & Farm Tech – Mr Himendra Mathur

On the 8thAGM, INFAH Recognized the contribution of individuals towards development of AH sector in the form of "INFAH Award".

"INFAH Award" was presented to Dr. S.S. Chousalkar for his exemplary contribution to society at large and Animal Health Industry in particular. Dr. Jeetendra Verma read the citation for him. Over a period of more than five decades he served relentlessly working towards development of Animal Health sector. Dr S.S. Chousalkarcontributed significantly to enable access of quality &affordable products for the Indian farming community.

"INFAH Award" was also presented to Dr. Y.G. Deshpande for his outstanding contribution to the Animal Health Industry.Mr Anurag Agarwal read the citation.Dr Deshpande

Dr Arun Atrey facilitating Guest Speaker Mr Himendra Mathur

has immensely contributed in the area of veterinary pharmaceutical marketing, product development, product promotion along with consistent interaction and admirable relationships with academicians, research workers, practicing veterinarians &farmers.

All the awardees thanked INFAH for the award and delivered an Inspirational speech by sharing their success mantra with the audience.

Dr. Shirish Nigam, Joint Secretary INFAH, proposed vote of thanks. At the very outset he thanked all INFAH Members for their valuable presence during the AGM and their unstinted support to INFAH initiatives. Dr Nigam expressed sincere gratitude to entire managing committee for their continuous support. He thanked Guest Speakers, Mr Ram Kaundinyaand Mr.Hemendra Mathur for sparing theirvaluable time & sharing their rich insights with INFAH members. He recognized the contribution of each Subcommittee member and support of Dr Phalke and Ms Bhavana for the effective

Dr Shirish Nigam expressing vote of thanks

functioning INFAH. He thanked Dr. Nitin Bhatia & Dr. Rajni Choudhary for providing support in organizing the 8th AGM and for INFAH Connect publication. He thanked the hospitality and arrangements done by hotel staff. The program ended with networking dinner.

The Managing Committee of INFAH for the period 2019-2021 is as follows

Mr. Vijay Teng, *President*
Mr. Anurag Agarwal, *Vice President*
Dr. Vijay Makhija, *General Secretary*
Dr. B. P. Manjunatha, *Joint Secretary*
Dr. P. G. Phalke, *Treasurer*
Dr. Shirish Nigam, *Resident Secretary- Delhi*
Mr. Satish Pasrija, *Executive Member*
Dr. Arun Atrey, *Executive Member*
Dr. D. K. Dey, *Executive Member*
Dr. Sandeep Karkhanis, *Executive Member*
Dr. Jeetendra Verma, *Executive Member*
Mr. Gautam Chatterjee, *Executive Member*
Dr. TanweerAlam, *Executive Member*

DSM BECOMES INAUGURAL VALUE CHAIN PARTNER TO the International Egg Commission (IEC)

- DSM is the first to join the new International Egg Commission (IEC) partner program, as the sole IEC Value Chain Partner for Feed Additives and Sustainability
- Sustainable egg production is crucial in providing the planet's growing population with an affordable, safe and accessible form of nutrition – now and in the future
- The three-year partnership agreement will support sustainable egg production and help drive positive developments in the egg industry

■ **Switzerland**

DSM has become the first Value Chain Partner to the International Egg Commission (IEC), the international trade association representing the producers of eggs and egg products worldwide. The IEC was founded with the goal of fostering international co-operation among all sectors of the egg industry to their mutual benefit.

Designed to promote sustainable production and drive positive developments in the egg industry, the new Value Chain Partnerships will see the IEC form close strategic relationships with global organisations to deliver on the United Nations Sustainable Development Goals across the global egg value chain. DSM is the inaugural company to partner with the IEC on this basis and has been confirmed as exclusive IEC Value Chain Partner for Feed Additives and Sustainability.

The partnership will see the two organisations work together to tackle four key areas of joint interest: environmental sustainability of feed nutrition; human nutrition and poverty alleviation; anti-microbial resistance (AMR); and animal welfare.

Dr. David Nickell, Vice President Sustainability, Animal Nutrition and Health DSM, said: "Sustainability is a core value of DSM, it's both a responsibility and a business driver expressed in our "Purpose led, Performance driven" strategy. With the growing demand for animal protein and the increasing scrutiny on the sustainability of the industry, DSM is well placed to support more sustainable animal production through innovative nutritional solutions and technologies. Teaming up with the IEC makes perfect sense in helping with the sustainable development of the global egg industry".

Tim Lambert, IEC Chairman added: "We are committed to help deliver on the United Nations' Sustainable Development Goals. As an IEC Value Chain Partner, DSM has many shared values to help support the development of the egg industry".

Predictions from the World Resources Institute indicate that world demand for animal based food will swell by nearly 70% in 2050 compared to today, placing a strain on the planet's finite natural resources and the environment. Eggs are recognised as having a low environmental footprint compared to other animal protein and offer an affordable, safe and accessible form of nutrition for populations worldwide. As one of the leading producers of micro-nutrition for poultry, DSM's partnership with the IEC is one of its many commitments to help strengthen the central role of eggs in providing sustainable nutrition for all.

Dr. Fernando Cisneros, Global Senior Director Layers and Carotenoids, Animal Nutrition and Health DSM commented: "We believe in the importance of eggs as a valuable component of balanced, healthy nutrition for many across the world. The egg industry has been tremendously successful in meeting the growing demand for eggs as an affordable, accessible, sustainable source of protein. With our depth of knowledge and broad portfolio of products, solutions and services combined with the expertise of the IEC and its members, we can create further inroads into sustainable egg production together".

DSM has been a member of the IEC since 2011. It is already involved with the IEC's Global Initiative for Sustainable Eggs (GISE), which aims to champion continuous improvements in sustainability across the egg value chain. Areas of collaboration include: sustainable feed supply; the introduction of alternative raw feed materials & feed efficiency; reducing direct and indirect GHG emissions and reducing nitrogen and phosphorous flows to the environment.

Both DSM and the IEC are also actively involved in promoting the nutritional benefits of eggs and improving access to this key source of protein, particularly for populations that lack sufficient animal protein in their diet and suffer from nutrient deficiencies. DSM partners with the humanitarian nutrition think tank Sight and Life in order to bring more affordable and aspirational nutrition to millions of the world's most vulnerable children.

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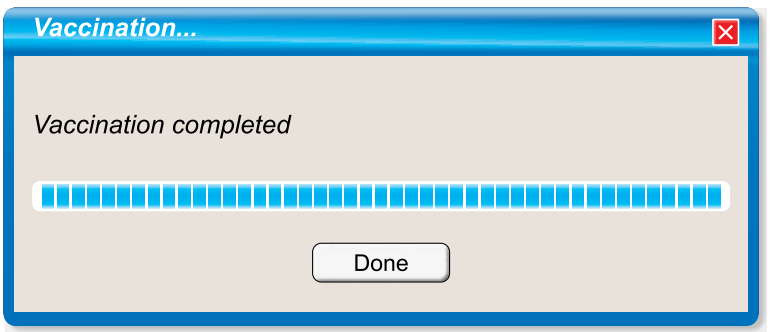

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LUMIS ENZYMES

EXHIBITS AT SIAVS, BRAZIL

LIVESTOCK PROFESSIONALS LINE-UP TO ATTEND ILDEX INDONESIA 2019

Increase business investment in the last quarter of the year at our trade show

At the conference, ILDEX offers 48 sessions including 12 academic sessions and 36 technical sessions by associations and top brands. All of the conferences are free of charge and visitors can reserve seats in advance at the online registration website. 91 speakers including 23 international and 68 local professionals will present at the conferences

■ **BSD City, Indonesia**

ILDEX Indonesia 2019, the fourth edition of the International Livestock, Dairy Meat Processing and Aquaculture Exposition, starts with strong attendance and plentiful business opportunities. Livestock experts and exhibitors have confirmed that this is the best marketplace and international business platform for Indonesian markets. The exhibition starts today and runs from the 18th to the 20th September 2019 at Halls 3&3a, ICE, Jakarta, Indonesia, delivering the highest quality and variety of new technology, business opportunities and numerous overseas trade buyers. The official opening event will be held on September 18, 2019 at the pre-function in front of Hall 3.Mr.AmranSulaiman, Ministry of Agriculture of Republic Indonesia will preside over the opening of the show along with both organizers, VNU Exhibitions Asia Pacific Co.,Ltd, and PT. PermataKreasi Media. Important guests such as FMPI (FederasiMasyarakatPerunggasan Indonesia), PT. JapfaComfeed Indonesia, PT. Charoen Pokphand Indonesia, PT. Farmsco Feed Indonesia, PT. Big Dutchman Indonesia and representative from Ministry of Agriculture, Indonesia, will also be in attendance.

This edition of ILDEX Indonesia is larger than last year and we are ready to create new visitor experiences at the new venue. In over 10,000 sq.m. ofthe Indonesia Convention and Exhibition center (ICE), ILDEX is showcasing 250 leading brands from 25 countries,where73%of exhibitors are international companies. Moreover,there are also three international pavilions for China, South Korea, and the Netherlands together with the FoodTech Indonesia pavilion. The main business sectors at ILDEX include Animal Health, Animal Housing & Farm Equipment, Animal Feed & Ingredients, Breeding & Genetics, Incubation & Hatchery, Slaughter to Processing, LAB & IT, and the special sector at this edition is 'Waste Management'. To complete the experiences of participants, ILDEX has introduced alive animalshow at the exhibition for the first time ever. There is also a relaxing zone for visitors

to take a rest and update their knowledge with global industry news from our Media Library zone, Buyer Lounge and the Business Matching zone, where we welcome 200 international and localhosted buyers.

At the conference, ILDEX offers 48 sessions including 12 academic sessions and 36 technical sessions by associations and top brands. All of the conferences are free of charge and visitors can reserve seats in advance at the online registration website. 91 speakers including 23 international and 68 local professionals will present at the conferences. The highlight of this edition is the special topic of "Waste Management," for which the organizer has invited speakers that fully understand waste matters in the livestock industry. The speakers are from IPB University, Big Dutchman and Kohshin Engineering and Indonesia livestock experts will offer knowledge and solutions with animal waste management systems. For animal health, visitors can attend the One Health - AMR Seminar by ILDEX, Ministry of Agriculture – Indonesia, FAVA, FAO, a seminar on animal health –a rabies seminar by Federation of Asian Veterinary Associations (FAVA);and Seminar Nasional: "Aplikasi Meta-AnalisisdalamIndustri Feed Additive danObatHewanMenuju Era 4.0" by the Indonesian Association of Nutritionists and Feed Scientists (AINI).

Mr. HeikoM.Stutzinger, Managing Director ofVNU Exhibitions Asia Pacific Co.,Ltd.said that "ILDEX exhibition isthe leading livestock business platform for international livestock companies to initiate business deals with local companies which will, in turn, stimulate investment in the Indonesian market. At this edition, there will be three international pavilions for China, South Korea and the Netherlands together with the FoodTech Indonesia pavilion. It is my great privilege to serve on behalf of the organizers of ILDEX Indonesia 2019 with our partners, PermataKreasi Media, FederasiMasyarakatPerunggasan Indonesia (FMPI). I can assure you that we have returned to provide the best marketplace for the industrywhich is in keeping with our objective - Livestock Industry Growth, Customized Service"

Widiyanto D. Surya, President Director PT. PermataKreasi Media said that "at ILDEX Indonesia, the latest technology and inventions from upstream to downstream in the livestock industry will be displayedand valuable information and knowledge will be shared. The exhibition will provide updates on the latest trends and technology, and visitors can build networks and share ideas and experience to improve the Indonesian livestock industry's capacity to meet the demand for premium and affordable animal protein. Eventually, the industry will not only be able to meet local animal protein demand, but also be able to meet ASEAN and surrounding countries' needs for high quality animals and animal products. Furthermore, we believe that the event is also an excellent opportunity to meet experts, professionals, scientists, as well as business partners from the livestock and animal health industry."

H. Don P. Utojo, President of FMPI said that "ILDEX Indonesia 2019 exhibition, seminars and meetings are attended byhundreds of companies, associations, organizations, and othersat the national and international pavilions.We hope that this indoor and outdoor exhibition will be the place where you can find new information, technology and knowledge to improve the efficiency and productivity of Indonesian livestock to strengthen the competitiveness of Indonesian livestock products in Asia and other regions."

Aviagen India team meets with Mr. Gurminder Singh Bisla,President of Broiler Breeders Association, North India

AVIAGEN INDIA SHOWCASES POPULAR BROILER BREEDER AT KARNAL SHOW

Broiler breeder optimizes productivity for growers in India

■ Udumalpet, India

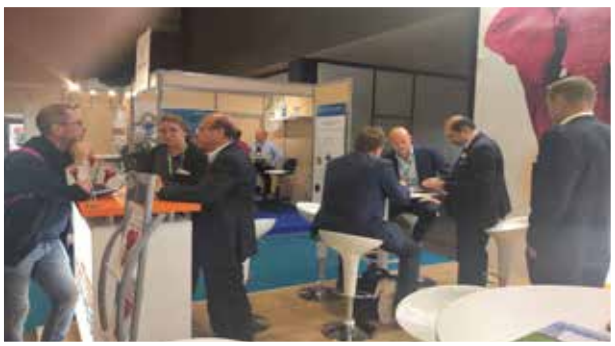
The popular broiler breeder, known locally as 308 AP, was a hot topic of discussion at the 2019 International Poultry and Livestock Expo, which attracted poultry and livestock professionals from throughout India to Karnal, Haryana, during Aug. 9-11. On hand at the event was the Aviagen India team, who welcomed customers and discussed with them ideas for maximizing the many benefits of the 308 AP. The bird's popularity has increased in Karnal and throughout India due to its excellent feed efficiency, environmental resistance, healthy growth rate and favorable meat yield.

Karnal is rapidly becoming the hub for Aviagen India's northern activities. With a well-established hatchery supplying customers across the region, the Company recently opened a branch office there to strengthen customer support.

Dr. Chandankhede Jayant, Aviagen India's Commercial Manager for northern India greeted visitors at the show and commented, "The Expo was a good event for us, with high traffic at our stand. We were the only breeding company exhibiting, and had a great opportunity to meet with broiler farmers, express our commitment to their success, and talk about how to get the best performance, health and welfare from their 308 AP breeders and broilers."

LUMIS ENZYMES

EXHIBITS AT SPACE, FRANCE



BIOMIN COMMITS TO AMR CHALLENGE TO COMBAT ANTIMICROBIAL RESISTANCE

Dr Jan Vanbrabant

A number of recent initiatives by BIOMIN including the opening of the Christian Doppler Laboratory for Innovative Intestinal Health Concepts in Livestock and the Feed and Food Quality, Safety and Innovation (FFOQSI) project specifically address improving animal gut health and combatting antibiotic resistance

■ **Getzersdorf**

Animal nutrition firm BIOMIN has announced efforts to combat antimicrobial resistance (AMR) in the agriculture sector.

BIOMIN has made a public commitment to the AMR Challenge, a multi-stakeholder initiative led by the U.S. Centers for Disease Control and Prevention (CDC) for governments, private industries, and non-governmental organizations worldwide to make progress against antimicrobial resistance.

In particular, BIOMIN commits to "expanding the reduction of non-medically necessary use of antibiotic feed solutions across the agriculture sector globally." This will be accomplished primarily through greater adoption of the firm's biotech-based solutions that cover mycotoxin risk management, gut performance and animal nutrition.

"In order to preserve the medicinal value of antibiotics, we need to use less of them. That means using alternatives to promote growth and maintain healthy animals," stated Dr Jan Vanbrabant, Managing Director of BIOMIN and Executive Board Chairman of ERBER Group.

"We use unparalleled technologies to deliver effective, easy-to-use solutions to the feed and animal protein sectors that bring such benefits and generate return on investment for our clients," he added.

Sustainability pioneer

"Since 1983, BIOMIN has been dedicated to supporting the feed and livestock industry with innovative non-antibiotic solutions," explained Dr Jan Vanbrabant.

The commitment by BIOMIN to the AMR Challenge coincides with the firm's goal to support sustainable agriculture, which entails the responsible use of antibiotics, enhanced profits and productivity, producing affordable food, generating employment, reducing the environmental footprint of farm animals and ensuring their health and welfare.

Science driven

As part of its pledge, the firm highlighted its research and development activities led by the BIOMIN Research Center, which aim "to further enhance the sustainability of the livestock and aquaculture industries and to limit or decrease rates of antibiotic resistance on farms."

A number of recent initiatives by BIOMIN including the opening of the Christian Doppler Laboratory for Innovative Intestinal Health Concepts in Livestock and the Feed and Food Quality, Safety and Innovation (FFOQSI) project specifically address improving animal gut health and combatting antibiotic resistance.

BIOMIN promises to support these activities "through knowledge sharing of scientific findings and industry best practices along with technical consulting for commercial partners."

Specifically, the firm has held dedicated events across the world in recent years focused on antibiotic-free feeding programs featuring industry, academic and in-house experts.

The company is fully engaged in scientific and industry conferences and symposia throughout the world, culminating in the biennial World Nutrition Forum.

PROSPECTS OF EMU FARMING IN INDIA

Aamir Suhail Khan , Jyoti Palod , Brijesh Singh and Navneet Fonia
1&4 MVSc scholar (Poultry Science), 2&3 Professor
Department of Livestock Production Management, College of Veterinary and Animal Sciences, G.B.Pant University of Agriculture and Technology, Pantnagar- 263145, Uttarakhand,India palod_jyoti17@rediffmail.com

Poultry industry in India is one of the fastest growing livestock sector in the country and is heading towards scientific modernization. The contribution of this sector to agriculture and total Gross Domestic Product (GDP) during 2010-11 was 29.7 per cent and 4.07 per cent, respectively. Poultry industry in India, though one of the fastest growing segment of animal husbandry sector, uncertainty prevails in the mind of poultry entrepreneurs because of chronic and acute problems of high feeding cost, emerging and re-emerging diseases, vaccine failure and fluctuating market price of meat and eggs. Eruption of transmittable, zoonotic and communicable diseases to excess of heat or cold are the main threats to poultry industry which leads to massive deaths and sudden fall in production. All these conditions necessitate the poultry industry to be diversified with other species viz., duck, quail, turkey, emu, and ostrich. Out of these diversification Emu farming is emerging these days with two main purposes:

i. The first purpose is to breed birds - to increase the emu population, because of the high profits that can be made by selling adult emus as breeding birds.

ii. The second purpose is to slaughter birds -to get the by-products like emu meat, emu oil, emu feathers, emu skin and emu nails.

Emu (Dromaius novaehollandiae) is a large flightless bird originated from Australia. It is the third biggest bird in the world after Ostrich and Cassowary. Emu is a tough and an exotic sturdy social bird which can thrive well in non-fertile land and has not been included in any of the schedules of wildlife (protection) act, 1972. Hence no permission from forest department and any other agencies are necessary for rearing and marketing of emu. Emu is reared commercially in many parts of the world, viz., Australia, China, USA, Peru, Saudi Arabia etc. for their meat, oil, skin and feathers which are of high economic value. Australian government in 1975 had started domesticating emu living in forests by establishing big farms, but the first commercial emu farming to produce emu meat, leather, oil was started in Western Australia in 1981 and the first slaughter occurred in 1990 (O'Malley, 2003). In India, emu farming was started as an entrepreneurship in 1996 with import of live birds from USA. A company named 'Vijaya Ratites' in Andhra Pradesh was the first to undertake the activity on a commercial scale and later the entire farm was sold to 'Flightless Birds of India' (FBI) in 1997. FBI is the foundation farm of the emu birds and the total strength of the birds in the country are derived either from the birds imported by them or from their progeny. Emu farming in India was initially concentrated in Southern States with usual importance given for breeding. Farmers bought 10 to 15 pairs from a big breeder and had an option of becoming a self sustained breeder to produce chicks for sale or an integrated farmer to sell hatching eggs back to the integrator. The products sale in India is yet to take shape due to lack of awareness and non-availability of sufficient emu population. The future of this industry will be diversified into emu farming for fattening and breeding. Emus raised for fattening will be fed with different rations so that they will gain body weight at the earliest and yield all the products suitably. The preferred age for fattening is less than 24 months and ideal is 12 months.

Emu farming in India is still in primitive stage and the activity is rapidly increasing in size and number, by spreading into many states including Andhra Pradesh, Maharastra, Tamilnadu, Kerala, Gujarat, Punjab, Manipur, Chandigarh, Orissa and Assam. This expansion is likely to continue in the coming years in many other states. Majority of the existing emu farmers are rearing the birds simply to increase the number of birds further. Many small sized farms are emerging day by day but neither there is a census available nor any method been designed to account them so far. But, according to Indian Emu Association of India there are around 2000 farms with six lakhs birds in the country.

Emu provides different products of economical value. The prime cuts of emu meat can be ready for sale to restaurants, residential orders, worldwide markets and in the future, shipment to supermarkets. Emu fat is rendered

to produce oil, which has dietary, therapeutic (anti-inflammatory) and cosmetic value (Rao, 2004). Emu oil is found to be more cosmetically acceptable with better skin penetration compared to mineral oil (Zemtov et al., 1996). Additionally, the medical industry uses the oil for therapeutic rubbing oil, skin and facial moisturizing lotions and medical applications used for treating the skin of burn victims.

Emu skin has a similar tensile extensibility to ostrich skin and a rigidity value comparable to pig skin (Hoven, 2002). Emu skin is fine and strong, leg skin is of distinctive pattern, hence highly valued (Rao, 2004). Emu leather is well suited for embellishing designer apparel, boots, wallets, handbags and many other accessories. The feathers of the emu birds are double quills, attractive and velvety to touch and they are in demand in the fashion, art and craft industries.

Zoological classification of Emu is as under	
Kingdom	Animalia
Phylum	Chordata
Sub phylum	Vertebrata
Class	Aves
Order	Struthioniformes
Family	Ratite
Genus	Dromaius
Species	novaehollainde
Characteristic features of Emu	
Height at birth	8-10 inches
Adult height	5-6 feet tall
Adult weight	100-140 pounds
Colour	Black and Brown
Temperament	Friendly and docile
Lifespan	30 years (approx)
Breeding method	Mated in pairs
Productive years	up to 25 years
Eggs per year	10 to 20 eggs in the first breeding season, gradually increases up to 20-30 eggs in subsequent breeding seasons
Age at slaughter	16-18 months

Natural food of emu are insects, leaves of plant and forages, different grasses, also eats different kinds of vegetables and fruits like carrot, cucumber, papaya etc. Emu chicks weigh about 370 - 450 g (about 67% of egg weight). For the first 14 weeks or till attaining standard body weight of 10kg emu chicks are fed with

starter mash. Birds are fed with grower mash till their 34 weeks or 25 kg body weight. Finisher ration is offered from 35 weeks age to slaughter or up to 12 - 18 months age. Emu birds attain sexual maturity at 18 - 24 months age. First egg is laid around two and half years of age. Eggs are laid during October to February, particularly in cooler days of the year.

Physical features of Emu

Emu chicks when hatch out have body stripes similar to squirrel, later as they grow after three months they lose the stripes to turn into brownish black feathers. Adult emu is a large bird up to 6 ft ht. with long neck and small naked head. Adult usually weighs 45 to 60 kgs. Legs are long and covered by scaly skin and it is tri ductile (three toes in the leg), entire body is covered by long feathers except part of the neck.

Sex differentiation

Phenotypically emus look similar in both sexes. However, sexing is done on day old, based on feather sexing, vent sexing by identifying male organ and sound differentiation on maturity. Identification of emus is done usually by painting different colours on the legs, leg strips and micro chipping. Male emu after maturity makes grunting sound and female makes drumming sound.

Breeding of Emu

Emus attain sexual maturity by 18 to 24 months. Breeding occurs during winter season (October to February in India). They are monogamous indicating one male for one female. In nature, the female mates with the male during breeding season and gives a clutch of eggs. Later, male sits for brooding on these eggs for a period of 52 days without food and water. However, the female continues to breed with new partners during the whole breeding season. The chicks hatched out follow the male emu rather than the female.

In commercial farming emus are paired in separate enclosures after maturity depending on the compatibility of the pair. Emu generally gives eggs during evening between 5.30 to 7.00 p.m. Each adult emu after three years can give an average egg production of 30 eggs during breeding season between October to February.

Hatching of Emu eggs

Emu eggs are emerald green in colour weighing about 600 to 800 grams. The incubation period in emu is about 52 days. Eggs are collected on regular basis and are stored in a cooler temperature of 600F maximum up to

one week. Later they are set in incubator machines which are specially designed to hold emu eggs with a dry bulb temperature of about 960 to 970 F and wet bulb temperature of about 780 to 800F (about 43% relative humidity) up to 48th day, with regular turning mechanism every one hour. From 49th day, the eggs are shifted to hatcher, wherein till 52nd day they are kept. Emu chicks hatch out on 52nd day naturally, sometimes assisted hatch is also carried out manually by helping the chick to come out by opening the shell at the head and toe positions. The normal hatchability is about 80%.

Chick Management

Emu chicks weigh about 370 to 450 grams (about 67% of the egg weight). For the first 48 to 72 hours, emu chicks are restricted to Hatcher itself for absorption of egg yolk and proper drying. The brooding shed is prepared well in advance with thorough cleaning and disinfection and flooring covered with gunny bags to prevent slipping of legs of young chicks. Emu chicks have long legs and are very active, slippery flooring will make emu chicks to have hip dislocation resulting in irreparable damage. A set of brooder is arranged for about 25 to 40 chicks giving four sq.ft. per chick for first three weeks. Brooding temperature of 900 F is provided for the first ten days and 850 F till three to four weeks. Feed and water are provided ad lib and a brooder guard of 2.5ft height is placed. Feed starter mash for first 8 weeks. Provide sufficient run space for the chicks to have healthy life. Hence, floor space of 40ft x 30 ft is required for about 40 chicks with outdoor space.

Grower Management

As emu chicks grow they require bigger size of waterers and feeders and increased floor space for run. Grower mash is fed till 34 weeks of age. 10% greens can be offered, de-worming of the birds is done once with broad spectrum anthelmatic /ivermectin and vaccination with R2B at 8th week and repeated at 40th week. 40ft x100 ft space is provided for 40 birds.

Breeder Management

Emu birds are seasonal layers and monogamous, they require different nutritional requirements which are varied during breeding season. A pre breeder ration with high protein and micro nutrients is given to prepare for breeding. During breeding the feed consumption is reduced to fifty percent. After breeding maintenance ration is given with low protein and low energy.

Housing and Feeding of Adult Emus

Emus are reared in open paddocks which have chain link fencing of 2x2 or 3x3 enclosure with 2 ft. concrete wall construction , on this chain link , mesh of 6 ft. ht. is erected. Night shelter is optional with usual asbestos sheet roofing of 6 to 8 ft. Emus need balanced diet for their proper growth and reproduction. Feed alone accounts for 60-70% of the production cost, hence least cost rations improve the margin of returns over feeding. In commercial farms, feed intake per emu breeding pair per annum varied from 394-632 kg with a mean of 527kg. Feeding is given in feed troughs which are usually hung on the fence and water is given in specially designed water tank or troughs with good drainage. Feeding is done twice daily and water is provided ad lib.

Health care and management

Ratite birds are generally sturdy and live long (80% livability). Mortality and health problems in emus are mainly in chicks and juveniles. These include starvation, malnutrition, intestinal obstruction, leg abnormalities, coli infections and clostridial infections. The main causes are improper brooding or nutrition, stress, improper handling and genetic disorders. Other diseases reported are rhinitis, candidiasis, salmonellosis, aspergillosis, coccidiosis, lice and ascarid infestations. Ivermectin can be given to prevent external and internal worms at 1 month interval beginning at 1 month of age. In emu, enteritis and viral eastern equine encephalomyelitis (EEE) have been reported. In India, so far few outbreaks of Ranikhet disease have been recorded based on gross lesions but not confirmed. However, the birds vaccinated for R.D. at the age of 1 (lasota), 4 (lasota booster) weeks; 8, 15 and 40 weeks by mukteshwar strain had better immunity (Rao, 2004).

Products of Emu

Various products of economic importance obtained from emu are as under:

1. Emu meat

It is about 98% fat free red meat, which is similar in look to other red meats viz., beef, mutton, deer meat etc. Emu meat is rich in iron and vitamin C. The tenderness and texture of Emu meat enables it to be fit for preparations which are lightly grilled and pan fried, since emu meat is low in fat, it loses moisture quickly and is best under moist heat cooking.

Table 1 Composition of cooked Emu, Beef, Pork and Chicken

Composition	Emu	Beef	Pork	Chicken
Moisture (%)	63.1	59.5	60.7	63.1
Protein (%)	33.0	28.6	28.6	27.4
Fat (%)	2.3	9.6	9.8	9.7
Ash (%)	1.3	1.2	1.4	1.0
Energy(Kg Cal/85g)	130	178	178	
	174			
Iron(mg/85g)	6.0	2.1	0.8	1.1
Vitamin B-12(micron gm/85g)	1.96	1.70	0.61	0.27
Thiamin(mg/85g)	0.36	0.08	0.78	0.06
Vitamin(IU/85g)	8.6	0.0	6.0	61.2

2. Emu Oil

Emu oil is semi solid white mass, which is generally located all along back of bird, but when it is processed and refined it is a clear liquid. Emu oil fatty acid composition is almost similar to human skin, which makes it to have high permeability when applied on to human skin. This property of high permeability is made use for delivering specific drug molecules for treatment of various skin condition as:

- Anti-inflammatory
- Moisturising
- Cholesterol Reducer
- Bacteriostatic
- Penetration Enhancer
- Significant epidermal proliferators
- Non- Comedogenic
- Significant wound healer
- Significantly reduces recent keloid scarring
- Faster healer of burn with less pain and scarring
- Anti-Arthritic
- Excellent Emulsifier

- The bird is able to see up to a distance of 10 meters and its eyes are being used to replace damaged corneas in human beings.

3. Emu Skin

Emu skin is of high quality with usual yield of about 6 to 8 sq.ft. per bird, which is used in preparation of leather products including apparels. The leg skin is very unique and with scales similar to crocodile skin and is being used in protective coverings for knives, swords and shoe top etc. Emu skin is very soft it can take up any colour and hence can be decorated with a variety of colours. Emu skin can fetch handsome money in international market.

4. Emu feathers

Emu feathers have double rafts with sub branching , the down feathers are soft and are being used in preparation of brushes specifically used in cleaning hard ware and circuits of electronic goods including computers.

5. Emu eggs and Toe nails

The unfertilized eggs which are emerald green are cleaned and used in crafting antique mementos for sale with different carving on the shell. Emu nails are also been used as key chains, pendants in necklaces.

Opportunity of Emu Farming in India

In India, chicken is the most popular of the poultry species, followed by ducks and quails. Of late, we need to diversify to other species of poultry in order to reap more profits. Emu is a social bird with dark whitish complexion. The birds live in groups and can thrive under varying climatic conditions ranging 0° C to 52° C. These birds are omnivorous and eat leaves, vegetables, fruits, insects, worms. They can be fed modified poultry feed. At present there are four Emu Associatison in India. They are - at Hyderabad as Indian Emu Association", Mumbai - "National Emu Assocation". These two associations are working at all India level. And in Maharastra level at Baramati in the name of "Maha Emu Association" and another at Pune in the name "Emu Farmer Association". The experience of the Association in these states has been encouraging.

Scope & Potential

Although emu farming offers great scope and potential because of its supplementary income, additional employment and simplicity in operation, it is a newly entered enterprise in Indian

sub-continent, so practical availability of scientific information or published literature about emu farming is very limited. Less attention has been paid in carrying out research in this economically important species of birds in India. Efficient emu development can be achieved by promotion of small units in villages through a gamut of functions like dissemination of information and technology, making available various inputs and organizing training sessions for farmers on this subject

References

Darla, R. D., Leslie, D.T. and Linda, C. H. (2000). Nutrition composition of Emu compares favorably with that of other lean meats. J. Amer. Diet.Asso.,100 (7): 836-837.

Hoven, V.T.M. (2002) Characterization of alligator , ostrich and Emu skins and comparisons to traditional leathers. PhD Thesis, Louisiana State University, Louisina.

http://www.cpdosrbng.kar.nic.in/EMU%20FARMING%20IN%20INDIA.pdf

http://www.indiaemufarm.com/category.php?id=19

http://www.indg.in/agriculture/animalhusbandary/poultry/emu-rearing.pdf

O' Malley, P. (2003) Emu Farming - The new rural industry, A Handbook for farmers and Investors. http:// www.rirde.gov.au/pub/handbook/ emu.html

Ponnusamy. S (2011). A study on the commercial emu farming practices in western region of Tamil Nadu. M.V.Sc Thesis, IVRI, Izatnagar

Rao N. S. (2004). A study on the performance of Emu (Dromaius novachollandiae) in Andhra Pradesh. MVSc Thesis submitted to the Acharya N. G Ranga Agricultural University, Hyderabad.

Zemtov, A., Gaddis, M. and Montalvo - Lugo, V. (1996). Moisturizing and cosmetic properties of Emu oil: A pilot double blind study. Australas J. Dermatol., 37: 159-162.

KEY POINTS OF ORGANIC POULTRY FARMING

C.B. Singh, Nitesh Kumar Singh, Namita Naula and Dushyant Sharma
Department of Livestock Production Management
College of Veterinary and Animal Sciences
G.B Pant University of Agriculture and Technology-Pantnagar
dr.cbsingh2012@gmail.com

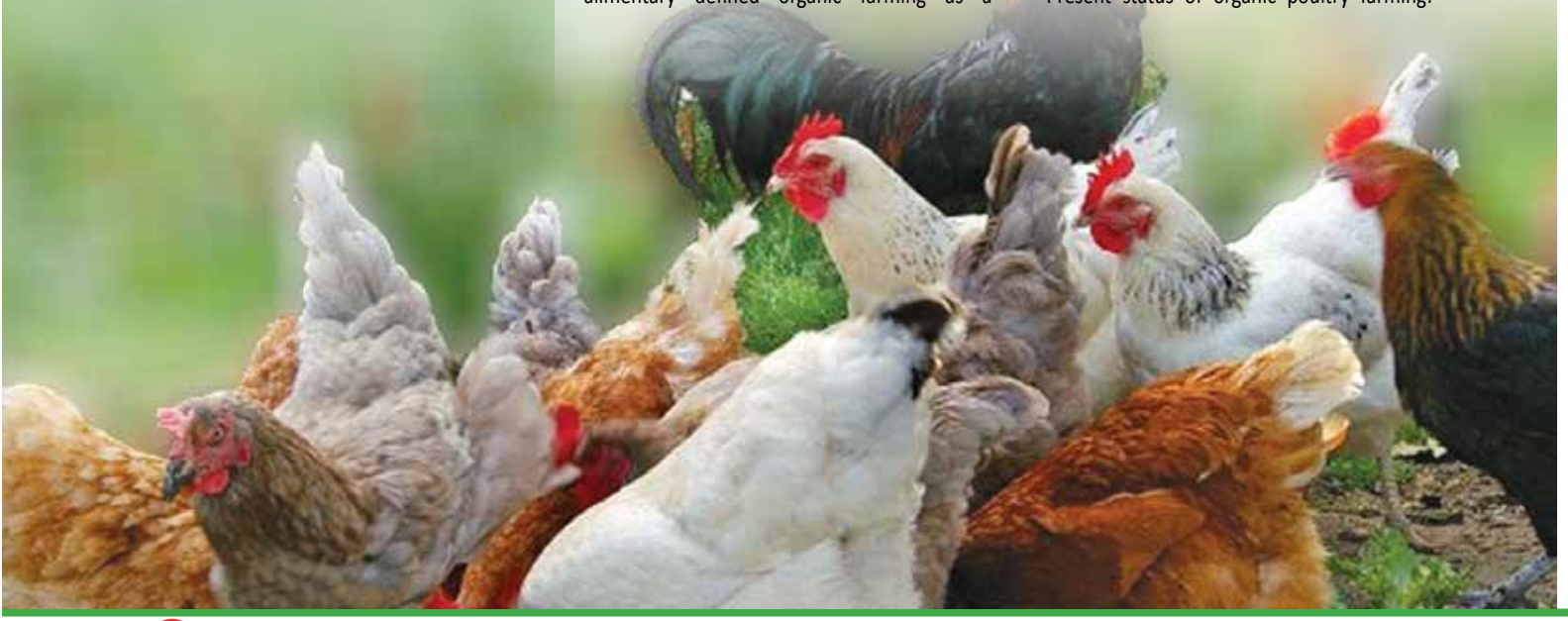
Thousands of poultry farmers have now visualized that poultry farming is a profitable venture as a means of livelihood and economic prosperity. Today poultry industry has been playing a very significant role in various socio- economic development programs by way of providing self- employment, supplementary income and protective food to all the section of society especially for rural masses in the country. A commission of FAO/ WHO codex alimentary defined organic farming as a unique production management system which promotes and enhances org-ecosystem health, including biodiversity, soil biological activity and is accomplished by using on farm agronomic, biological & mechanical methods in exclusion of all synthetic off farm inputs.

Poultry industry has developed in to a full fledged industry with immense potentials for meating domestic market with per capita availability of eggs and meat increasing from 18-19 eggs and 0.091 Kg. poultry meat in the year 1975 to 69 eggs and 3.6 Kg. of meat at present. With an annual output of ₹ 88.14 billion eggs & 3.46 million tonnes(2016-17), India ranks 3rd largest producer of eggs (after china & USA) & 5th largest producer of broiler in the world (after USA, China, Brazil and Mexico). The increased poultry production during last 4-5 decades was possible largely because of a fundamental change in the view point of both, the planners and farmers. Thousands of poultry farmers have now visualized that poultry farming is a profitable venture as a means of livelihood and economic prosperity. Today poultry industry has been playing a very significant role in various socio- economic development programs by way of providing self- employment, supplementary income and protective food to all the section of society especially for rural masses in the country. A commission of FAO/ WHO codex alimentary defined organic farming as a unique production management system which promotes and enhances org-ecosystem health, including biodiversity, soil biological activity and is accomplished by using on farm agronomic, biological & mechanical methods in exclusion of all synthetic off farm inputs.

The main objectives of organic farming are to established and maintain soil-plant, plant-animal and animal- soil inter dependence and to produce a sustainable agro- ecosystem based on local resources (Biradar et. al. 2011). The establishment of organic dairy/ poultry husbandry requires a specific care and a sufficient time. This period is called as conversion period. This is the time interval between the start of organic management on farm and certification of the farm and its products. In organic poultry farming the preference should be given to local/ indigenous breeds or breeds developed for rural poultry which can thrive in organic management system. Further proper care and suitable environment should be provided where the birds can exhibits their natural behavior.

Present status and possibilities

Present status of organic poultry farming:



The revolutionary changes in poultry industry in last 4-5 decades itself is a matter of pride. In 1957 the white egg layer used to produce 210- 220 eggs with the efficiency of 3.4- 3.5 kg. feed against 290-300 plus eggs with 2.5-2.6 kg. feed per kg. egg at present. IInd 55 years back 6- wks broiler weight was 0.8 kg. and 3.2 kg. feed was required to produce 1 kg body weight, where as today at the same age 1.8 kg. body weight is attained the feed efficiency of 1.9 kg.

From last one decade due to increased health awareness and consumer preference organic farming increased day by day throughout the world. In USA organic meat sector is growing very rapidly in which poultry meat (Chicken meat) is prominent. Chicken meat is the most important organic meat due to its short production cycle & low cost as compared to other livestock meat. India exported a large no. of organic agriculture product every year which are totally of plant origin, where as India has a large no. poultry population 729.21 millions, Even of a small shift from current conventional production to organic poultry production can create a large market to domestic consumption as well as for export. As India has a good resource there may be a vast scope for production of organic farming in export market.

Organic Poultry Breeding

There is a large no. of poultry breeds/ strains which can rear for commercial and rural poultry production, but among them few breeds/ strains are suitable for organic poultry farming. Indigenous/ local breeds or breeds developed with organic & free range system are mind may be used for organic poultry farming. Breeds/ strains used in intensive production and have some specific disease health problems should be avoided from breeding purpose. Natural breeding method should be used. For improve the fertility A.I. can be use under guidance of technical expert or veterinary experts. Any hormonal treatment should be avoided for improve the growth and egg production point of view. Some breeds which have developed by different organization for rural poultry farming and have better performance can select for above purpose among them same as are under:

Table: Breed/ variety developed for rural poultry farming

Sl.	Breed/ variety	Type	Institution	Remarks
1.	Vanaraja	Dual	PDR, Hyderabad	Better immune competence
2.	Giriraja	-do-	-do-	Suitable for meat& egg
3.	CARI Gold	-do-	CARI, Izzatnagar	-do-
4.	CARI Nirbhik	-do-	CARI, Izzatnagar	-do-
5.	CARI Shayama	-do-	CARI, Izzatnagar	-do-
6.	CARI Hitcari	-do-	CARI, Izzatnagar	-do-
7.	Nico- rock	-do-	CARI, Portblair	Suitable for hot humid costal area
8.	Krishna Priya	-do-	KAU, Manuthy	Suitable for meat& egg
9.	Gram Priya	Egg	PDR, Hyderabad	Suitable for egg
10.	Nishibari	Egg	CARI, Portblair	Suitable for hot humid areas
11.	Rajashree	Egg	SVVU, Hyderabad	Suitable for egg
12.	Pratapadhan	Dual	MPUAT, Udaipur	Reasonable with local birds of Rajasthan
13.	Kamarupa	Dual	AAU, Guwahati	Hgh survival rate
14.	Srinidhi	Dual	PDR, Hyderabad	High egg producer under farm as well as backyard condition

Housing requirement

The main objective of housing should be to protect birds from cold, rain, heat, strong wind, adverse weather & predators. A poultry house should have easy access to the connecting main road. House should be well ventilated, solid walls and only raised 3ft. high from ground and chicken wire fitted up to the roping base to avoid direct wind droughts into poultry house. House should be designed which allow maximum natural light. The foraging area can be constructed entirely of poles and chicken wire on walls & road. Some open area in the form of with plant and grasses which provide the green forage to the birds should be developed near to poultry house. Green forage improve the yellow egg yolk quality in the birds and running during foraging in lawn area helps in control external parasites in birds as well as acting as natural disinfectant for pathogens/ germs. A adult laying bird in organic system should be provided of minimum 2ft./ bird in the confined and 3ft./ bird as foraging area i.e. 5 sq.ft./ bird. The litter must be kept dry at all times by removing the wet and caked litter. Sufficient feeding and watering space (4-5 cm/ bird for feeding and 3-4 cm/ bird for watering) should be provided to the birds to reduce number of competitions among birds.

Feeding

Feed & feeding is an important factor in the whole operation & contribute as about 60-70% of total recurring expenses. Poultry must be fed a diet that contains a minimum of 60% certified organic feed. Not more than 20% feed should come from non-organic feed. Organically reared birds need 20-50% more feed per unit of weight gain than conventional reared birds, mainly because of increased activity in the run. Scattering grain & providing roughages is a good way of keeping the hens busy and healthy. However, if feeding a compounded diet, the nutrient content of the scatter grain will affect the overall nutrient intake of the birds & could feed to imbalances. The average feed consumption in organic production system for layer and broiler are 130 gm and 85 gm, respectively which is 118 and 77 gm in conventional production system. In organic poultry production, birds should be reared only for one laying season.

Health Management:

As prevention is better than cure but it is important to note that animals raised in an organic system be treated with antibiotics, if they become infected with a disease for which a no-antibiotic treatment is not available or has not been effective. Unfortunately, birds treated with antibiotics can no longer be marketed as organic. So it is important to find out some alternative treatment methods for common poultry ailments. In this context some points may be beneficial regarding the alternative methods of treatment of poultry birds.

- Currently the rules for organic animal husbandry do allow routine vaccination where there is an urgent need and other methods of treatment can be regarded as less acceptable.
- A probiotic is a culture of single bacteria strain or mixture of different strains that can be use to an animal or bird to improve some aspects of their health. A verity of different types of bacteria or undefended culture has been tested as probiotics in poultry. The results showed that feeding of probiotics to poultry may change their gut micro flora in a way that is beneficial to the health of the birds reducing the number of food borne pathogens carried by the birds.
- Prebiotics are non-digestible carbohydrates and many of them may be used for improving the health status of poultry birds.
- Various plant extracts especially essential oils have been tested for their anti-microbial abilities. Some of them like oil of black paper, essential oil of cinnamon, garlic oil, etc found beneficial for improve some aspects of digestibility of poultry birds.

The above probiotics, prebiotics and plant extract can be used an organic poultry farming to improve the growth and health status of poultry birds as a alternate source of antibiotics.

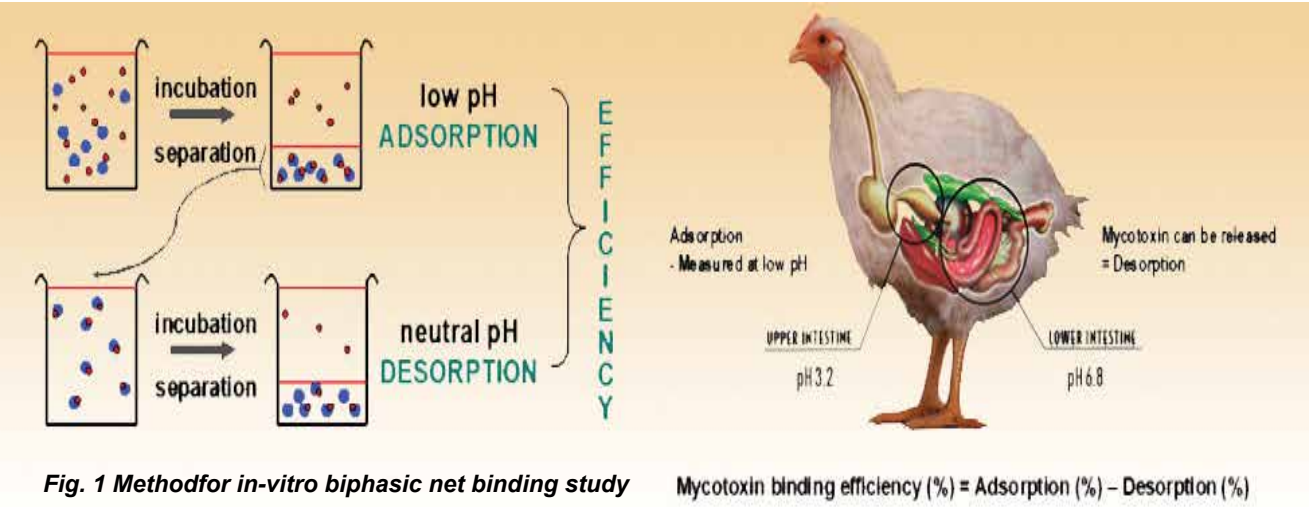


Fig. 1 Methodfor in-vitro biphasic net binding study

VALIDATING SOLUTIONS FOR TACKLING HIGH MYCOTOXIN CONTAMINATION

Dr. Rahul Mittal- Associate Product Manager, Kemin
Nabila Fathima- Sr. Research Associate, Kemin

India receives its major maize production from Bihar, harvested in April- May and Karnataka and Andhra Pradesh in last quarter of the year. This maize is mostly used in feed production around the year. At the time of harvest, the crop contains high moisture content which makes it conducive for growth of toxigenic fungus and subsequent mycotoxin production. It is generally observed that mycotoxin related problems are encountered more in 3rd and 4th quarter of the year. This is also because of the high precipitation in these parts of the year that moisture loss from the harvested maize is improper which further increases the chances of mold growth. Generally, the strategy to prevent the production and health losses in these times is to dilute the high moisture maize with older stored maize and using a more potent toxin binder. While some recommend increasing the dosage of regular toxin binder in case of high toxin challenge.Increasing dosage of normal bentonite-based toxin binder or activated charcoal also enables more vitamin interaction in feed which ends up doing more harm than good.

Today, lets look at how to arrive at the correct dosage of toxin binder when the challenge is high to get the best protection while keeping the production cost economically viable.

Kemin team devised a method to find the required dosage to control very high levels of contamination. The method is called in-vitrodose dependent study athigh mycotoxin contamination. To accurately simulate the challenge in the newly harvested maize,a very high contamination level of mycotoxins was taken to test toxin binder at various dosages.

Understandingin vitrodose dependent study athigh mycotoxin contamination

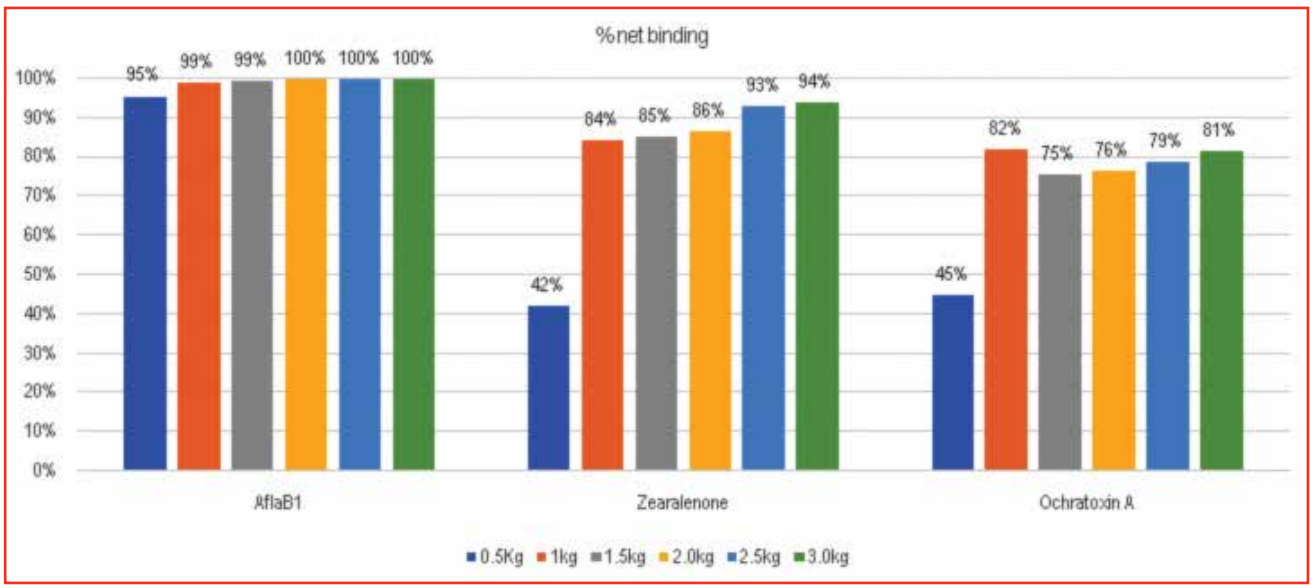
Usually, in vitro binding efficacy of toxin binders is tested at lower dosages. In this study, very high dosage of common mycotoxins is studied for binding efficacy at different dosages of toxin binder. These studies are done at 2 different pH (3.2 and 6.8) to simulate foregut and hindgut conditions of birds. This will give the net binding subtracting desorption at high pH

- All the results were calculated as biphasic net binding% i.eMycotoxin % net binding= Adsorption (%) at pH 3.2- Desorption (%) at pH 6.8 (See Fig.1)
- Contamination Level- Working concentration of 5ppm
- Aflatoxin B1- 5ppm- 250 times above the EFSA recommendations
- Zearalenone- 5ppm- 12.5 times above the EFSA recommendations
- Ochratoxin A- 5ppm- 125 times above the EFSA recommendations
- Kemin's Hybrid Nanosilicates (HNS) technology was tested at 0.5kg/MT, 1kg/MT, 1.5kg/MT, 2kg/MT, 2.5kg/MT and 3kg.MT

Fig. 1 Methodfor in-vitro biphasic net binding study

How is this study different?

While in vitro studies cannot give the exact measure of binding ability of toxin binders inside the bird's body but can certainly help to categorize the different toxin binders. Also, this study goes beyond the conventional net binding study at lower dosage and demonstrates the ability of more potent toxin binder technology like Hybrid Nanosilicates (HNS) to tackle very



high mycotoxin contamination.

Although contamination levels of 5000ppb is rarely seen in practical world, this study gives an insight into the ability of the test toxin binder to bind the mycotoxins even at unrealistic levels. This will ensure that in the high challenge period like monsoon and with newly harvested maize, an efficient technology can ensure adequate prevention.

Results[5]

- **HNS showed high level of binding with all three mycotoxins.**
- **While 0.5kg/MT of HNS was not enough to control high level of contamination, 1.0kg/MT and above dosage of HNS was found to be enough[5].(Fig.2).**
- **Also, dosage more than 1kg/MT did not prove to be showing a major increase in binding%**

Fig 2. %net binding of mycotoxins at different dosages

Conclusion:

In vitro dose dependent study at high mycotoxin contamination can be an ideal measure to test the right dosage of the toxin binder. Also, ideally a toxin binder should have efficacy to bind multiple mycotoxins and when the toxin contamination is high. HNS proves to have efficacy for the most common mycotoxins and 1kg/MT dosage can be safely used to prevent mycotoxicoses in high challenge periods

References are available on request

PREVENTION OF POULTRY FEED

SPOILAGE DURING STORAGE

Dr. DEV KUMAR, Dr. K.KARUPPASAMY, Dr. SHAITAN SINGH
MVSc Scholars (POULTRY SCIENCE)
CENTRAL AVIAN RESEARCH INSTITUTE, Izatnagar-243122

Spoilage caused by Aspergillus spp fungus

INTRODUCTION

Harvesting of crop is seasonal, but consumption of food grain is continuous. The market value of the produce is generally low at harvesting time. So the grower needs storage facility to hold a portion of produced grain to meet the requirements in addition to selling surplus produce when the marketing price is favourable. Traders and Co-operatives at market centres need storage structures to hold grains when the transport facility is inadequate. The government also needs storage structures to maintain buffer reserves to offset the effects produced by the vagaries of nature. Hence, there is necessity to store the produce for different periods primarily for commercial reasons. However, during storage considerable damage in poultry can be caused by moulds and insect infestations. Insects are present in most grain-handling systems and it is almost impossible to eliminate them completely. Control of moulds and insect is very much important to prevent poultry feed spoilage during storage.

REQUIREMENTS FOR IDEAL STORAGE FACILITY

- It should provide maximum possible protection from ground moisture, rains, insect pests, moulds, rodents, birds, fire, etc.
- It should provide the necessary facility for inspection, disinfection, loading, unloading, cleaning and reconditioning.
- It should protect grain from excessive moisture and temperature favourable to

Damage caused by insects

both insect and mould development.
- It should be economical and suitable for a particular situation.

HOW TO MINIMISE MOULDS AND INSECTS?

Damage from moulds can be prevented by proper drying and aeration of the grain. However, considerable damage can also be caused by insect infestations which can occur in dry grain. Insects are present in most grain-handling systems and it is almost impossible to eliminate them completely. However, loss from insect damage can be kept to a minimum by using the following program:

1. Remove all dust and old grain from bin walls, ceilings, floor and aeration ducts before refilling the bin.
2. Repair cracks from where insects might enter.
3. Spray inside the bin with a residual insecticide at least one a week before storing new grain.
4. Never store new grain on top of old since insects will move from the old grain into the new.
5. Cool grain as quickly as possible. Insects cannot reproduce at temperatures below 18°C.
6. Check stored grain regularly to detect hot spots.
7. Fumigate difficult insect infestations.

PREVENTING INSECT PROBLEMS IN STORED GRAIN

- Clean in and around the storage facilities. Grain storage facilities, and the area around storage facilities, should be cleaned thoroughly prior to storing grain.
- Clean equipment used to move grain. Grain left in equipment throughout the summer months can result in new grain being placed into storage becoming infested. Combines, truck beds, grain wagons, augers and other equipment used to move grain should be cleaned before moving the grain. Other potential sources of grain infesting insects include livestock feeds, old seed bags, spilled grain, etc.
- Inspect grain storage facilities for signs of deterioration, especially for leaks or holes through which insects or rodents can gain access to the stored grain.
- Treating storage facilities. Depending on the commodity to be stored, storage facilities may additionally be sprayed or dusted, if needed, with a recommended insecticide before storing grain in the bin (e.g. malathion, diatomaceous earth or cyfluthrin – refer to product labels for details). Note – some commodities, such as canola, flax and sunflowers, should not be stored in facilities recently treated with malathion.
- Dry and Cool Grain. If possible, grain should be dry before being put into storage, and cooled as quickly as possible. For long-term storage, lower the grain temperature below 15°C as soon as possible after the grain is placed in storage. At 15°C the stored product insects stop laying eggs and development stops. Aeration systems used during the night immediately after harvest should have the grain below 15°C in about 2 weeks. Once the grain mass is cooled to the desired temperature, fans should be sealed to prevent unwanted air migration through the mass that could result in early grain mass warm-up. Cold grain has a longer storage life than warm grain.
- Monitoring Pest Levels. Stored grain insects can be monitored either with traps, or by taking grain samples with a bin probe and then visually inspecting the samples. Traps for stored grain insects are long cigar-shaped tubes that are stuck into the top

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of the grain sample. For some traps there are pheromone attractants available, which may improve trapping-efficiency. Regular inspection with traps or probe samples will indicate potential problems that may be developing in the bin.

CONTROL OF FUNGUS FEEDING INSECTS

Be sure the grain is in good storage condition by:

- removing crusted areas and hot spots
- burning or burying discarded grain
- drying grain, if necessary

Chemical control of fungus-feeding pests is not necessary, since they cannot survive in sound, dry grain.

CONTROL OF GRAIN-FEEDING INSECTS

Grain-feeding insects are treated differently from fungus-feeding insects. There are 4 main options for controlling insects feeding on stored grain.

1. Cold Temperatures

An effective method of controlling insect infestations in stored grain in winter is to lower the temperature of the grain. Rusty grain beetles and most other stored grain insects can be killed by periods of low temperatures as follows:

Grain Temperature in degrees Celsius	Time Required to kill insects
-5^0 C	12 weeks
-10 ^{0}C	8 weeks
-15^0 C	4 weeks
-20 ^{0}C	1 week

Grain in bins over 6 metres in diameter will not cool sufficiently without assistance, such as through aeration, to control some insects.

2. High Temperatures

All four stages of insects (eggs, larvae, pupae and adults) will die if subjected to high temperatures for a sufficient period of time. The most realistic use of high temperatures for controlling insects would be when the grain was tough and in need of drying. In this case, the insects would be killed at the same time as the grain is dried. The insects need to be exposed to temperatures in the range of 50 to 55˚C for approximately 15 minutes.

3. Moving Grain

The use of pneumatic conveyors to move grain has been shown to give good control of some insect pests of stored grain.

4. Insecticides

Chemical treatment of the bin is another option. Diatomaceous earth can be used for control of grain feeding insects in many stored grains. It is sold under the trade names Protect-It or Insecto. Fumigants containing aluminium phosphide, such as Phostoxin, are available in pellet or tablet form. These fumigants should be used only when the grain temperature is above 4oC. The use and sale of aluminium phosphide in Manitoba is restricted to licensed pesticide applicators possessing a valid stored agricultural products license.

References

1. Bottomley, R.A., M.C. Christensen, and W.F. Geddes. 1950. "Grain Storage Studies IX - The Influence of Various Temperatures, Humidities and Oxygen Concentration on Mould Growth and Biochemical Changes on Stored Yellow Corn," Cereal Chemistry, 27: 271.
2. Boxall, R.A., M. Greeley, and D.S. Tyagi. 1979. "The Prevention of Farm Level Food Grain Storage Losses in India - A Social Cost Benefit Analysis," The Bulletin of Tropical Stored Products Centre, 37: 11.
3. Daniel, V.A., P. Rajan, K.V. Sanjeevarayappa, K.S. Srinivasan, and M. Swaminathan. 1977. "Effect of Insect Infestation on the Chemical Composition and the Protein Efficiency Ratio of Proteins of Bengalgram and Redgram," Indian Journal of Nutrition and Dietetics, 14: 70.
4. Glass, R.L., J.G. Ponte, C.M. Christensen, and W.F. Geddes. 1959. "Grain Storage Studies XXVIII - The Influence of Temperature and Moisture Level on the Behaviour of Wheat Stored in Air or Nitrogen," Cereal Chemistry, 36: 341.

JAPANESE QUAIL
A BOON TO SMALL FARMERS

S. Saravanan1, G. Elaiyaraja2, K. Karuppasamy3, Renjith Sebastian4, Prasanta Chabukdhara4.
1,4,5 Division of Biochemistry, 2 Immunology Division, 3 Division of Poultry Science.
Indian Veterinary Research Institute

"Small but beautiful" applies to poultry too, as folks who raise coturnix quail have found out.

Introduction:

As an alternate to broiler rearing, Japanese quail can fetch more profit and quick revenue to small farmers in the current scenario of poultry industry. According to our environmental condition with low input and limited space availability, we can rear Japanese quail easily compared to broiler rearing. Japanese quails (Coturnix Japonica) was different from a wild quail (Rhasianidae) and the ban has been lifted for quail farming as it has more impact on small farmers and revenue created will be more as compared to broiler. Japanese quail germplasm was supplied to the farm by Central Avian Research Institute for commercial production of broiler quail, which have high disease resistance without any routine immunization and vaccination.

When it comes to composition, quail meat has some interesting properties, which might aid in its marketing. In terms of its basic composition, it is quite similar to broiler meat, yet it has high protein content and a relatively low fat content (when skin is taken out, the figures for fat drop around 60% for quails and 80% for broilers, but only values for raw meat were available). In terms of lipids, it has slightly undesired saturated fats but when compared to other poultry meat it is much lower. However, it also has a higher content of the good polyunsaturated fatty acids. Looking at the minerals, we can see it is a significant source of phosphorus, iron and copper, while providing reasonable amounts of zinc and selenium. Vitamin-wise, it has high niacin (vitamin B3) and pyridoxine (vitamin B6) content. So, it has either the same or substantially higher amounts of minerals and vitamins when compared to broilers.

Cortunix quail require no more care than do chickens, but they mature faster, produce more eggs, need less feed and space, and have more benefits than virtually any other kind of domestic poultry, for example in a place of rearing a broiler we can rear 4 to 5 quail. Quails can produce an average of 250 eggs / year and can make 3 to 4 generation within a year.

Quails have FCR ratio in which their meat is tastier and healthier in terms of fat content. Quails have good immunity as the strain developed from indigenous type quails by repeated selection hence extensive vaccination like broiler is not required.

Quails egg weigh around 8-13 grams and day old quail chicks have body weight of 7-12 grams. After 4 – 5 weeks of time with proper feeding and care, quails gain body weight of 180 – 200g. Egg laying starts at 6 – 7 weeks of age and in between 7 to 24 weeks it has the capacity to lay 85 to 95 eggs.

Quail feeds 32 g of feed per day and has the FCR of 2.13-2.61. By 24 weeks age, quail has 70-75 % fertility and the same has 68% hatchability. At the same age they have dressing percentage of 72%.

Housing of quails

Dry lands without water stagnation and away from residence area are good to create sheds for quails. Keep in mind access to water, electricity and transport feasible area. The sheds should be constructed in east-west orientation and the distance between two sheds should not be less than 30 feet. The width of shed should be at least 30 feet. Length of shed can be made according to the capacity of rearing. The height of shed should be 10 – 12 feet. Protection with wire mesh should be given all around the opening area to protect from predators.

Housing and management of young quails

Quails can be reared in deep litter or cage system. In cage system 5 – 6 cages can be kept one over the other and care should be taken to avoid droppings falling on the lower deck. In case of deep litter system proper bedding material should be provided.

Quail Cages

Almost any small cage can be modified to hold Coturnix quails. Old tiered chicken brooders, with the heaters removed, serve as excellent colony pens. Or, of course, you can quite easily build your own enclosures. Be sure to provide 40 to 50 square inches of floor area per bird. The interior height of the pens should be about 8 to 10 inches to prevent the active quail from flying up and scalping themselves on the ceiling. The floor and sides are best made of half-inch wire mesh, which is small enough to prevent predators from sticking their paws inside but large enough to permit droppings to fall through. Pans can be placed underneath the cages to catch the nitrogen-rich manure for your compost bin or garden. And, for easier egg collection, the floor should be given a slope of one inch per foot: The mesh can then project a few inches beyond the cage and bend upward, allowing the eggs to roll out of the pen and into a wire apron, ready for gathering.

Domestic quail have lost the brooding instinct, thus their eggs must be either hatched artificially or set by a hen of another species. Choose a lightweight bird for setting, preferably one without feathers on her legs that might harbor lice. Every effort should be made, in fact; to use hens that are free from disease and parasites of any kind. Even chickens that appear to be healthy might transmit diseases to delicate quail chicks

Chick Care

Before the arrival of chicks the shed should be disinfected and bedding material like husk is spreaded and over that soft paper scraps can be used. Heat should be provided using incandescent bulbs in such a way that 1 watt/1-2 birds (eg. 100Watts bulb for 100-150 chicks. Using thick sheets, steel sheets or plywood partitions should be created at the height of 30- 45 cm height. Each partition can accommodate 200 chicks.

Shallow plates can be used as drinking water facility for chicks to avoid mortality due to drowning. Feed and water should be located adjacent to the heat source.

Newborn quail need at least ten square inches of brooding pen space each. If a heat lamp is used, it should be placed 18 inches from the floor and covered with wire mesh to prevent the litter from touching the bulb and igniting. Connect the heat source a day before the quail are due to hatch in order to have the brooder area warm and ready. Then, for their first hour or so, keep the little birds confined under the heat unit. (Later on, the best indication that all is well in your brooder is a good distribution of baby birds over the floor.)

Food should be supplied in flat trays for several days, after which it can be given in chick feeders. Make sure that the feed is ground fine and we can use a blender to reduce it to the consistency of drip-grind to enable the chicks to eat it without choking. Provide water in a standard Mason jar waterer with marbles or pebbles placed in the tray to attract the tiny birds.

For the first two days the wire-mesh floor or litter should be covered with burlap, but be sure the edges are secured so the babies can't get underneath the fabric and smother! Incidentally, don't use hardwood shavings for litter, since such materials can irritate the birds' eyes and nasal passages.

Maintain an incubator temperature of 98°F for the first week. After that, decrease the heat by 10°F each week until the chicks' cold-tolerance level matches the ambient outside temperature. (In summertime, this will take two or three weeks.) When it's time to take the quail out of their nursery, put them in a pen by themselves. They may be pecked to death if caged with mature birds.

Feeding Quail

Coturnix require a feed containing 21% to 25% protein (chicks require an even higher percentage). Such levels can be found in commercial turkey starter and game bird starter, but if you can't get these, you can use a feed with less protein and supplement it with grain, sprouts, and bugs. (A small light in or near the cage will attract insects to your birds' "dinner table.")

Breeding Quail

The quail begin to breed and lay eggs at only six to eight weeks of age, as opposed to the 20 to 24 weeks required for a chicken to begin producing. You should, of course, use only the biggest and best looking birds for breeding.

Three of the six Coturnix varieties can be sexed by color at about three weeks of age. The Australian Speckled Fawn male has a dark head, while that of the female of the species is light. Both Manchurian Golden and Pharoah D1 males have brick red breasts, whereas the females' breasts are speckled.

The other varieties must be sexed by vent examination after they've begun to breed. A sexually active male will have a rounded protrusion above his vent. When this ball is gently squeezed 'foam' will run out. (The foam, which resembles shaving cream, is a kidney discharge.) The size of the globe indicates the

degree of interest the male has in mating.

The breeding ratio can be one male to two females, or simply one to one. You can put each pair or trio in a separate pen or use a colony cage to accommodate several breeding groups, whichever is more convenient.

Hatching Eggs

Fertile eggs should be gathered daily (collect them several times a day during very hot or cold weather). When you're saving eggs for hatching, select only ones that are perfect and do not wash them. Store the birds-to-be for no longer than ten days at a temperature between 55 and 70°F and a relative humidity of about 75%. They should be kept with the small ends down and rotated laterally at least once a day.

Domestic quail have lost the brooding instinct, thus their eggs must be either hatched artificially or set by a hen of another species. Choose a lightweight bird for setting, preferably one without feathers on her legs that might harbor lice. Every effort should be made, in fact; to use hens that are free from disease and parasites of any kind. Even chickens that appear to be healthy might transmit diseases to delicate quail chicks.

In terms of sensory properties, Murakami and co-workers found that quail meat has good acceptance by the consumer, based on quite positive sensory perception. Surprisingly, they found even higher ratings (in their category "taste") for laying quails (either discarded after the laying period or males that were wrongly sexed). In the case of the older birds, this is totally unexpected. After all, they show higher shearing forces and have less water retention capacity. This good surprise makes the use of layer breeds for meat consumption in the cases above a viable and interesting solution for the egg producer.

Conclusion:

Quail farming is a growing field especially among small farmers who wants to become an entrepreneur. It's a good start as it is well known that both meat type and layer type can ultimately produce benefit in either production of eggs or in the production of quail meat.

References:

Post-peak egg production in local and imported strains of Japanese Quails (coturnix coturnix

japonica) as influenced by continuous and Intermittent light regimens during early growing period A. S. Jatoi*1 , M. K. Khan1 , A. W. Sahota1 , M. Akram1 , K. Javed* , M. H. Jaspal1 and S. H. Khan† Annals of Biological Research, 2011, 2 (1) :149-155

Effect of varying dietary energy to protein ratio on productive performance and carcass

characteristics of Japanese quail Seyed-Alireza Siyadati1*, Mehrdad Irani2 , Khosro Ghazvinian3 , Afshar Mirzaei-Aghsaghali1 , Vahid Rezaipoor2 , Hasan Fathi1 , Kamel Alipoor1and Samad Zamanzad- Ghavidel1 The Journal of Animal & Plant Sciences, 23(3): 2013, Page: 727-730 ISSN: 1018-7081


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COLIBACILLOSIS IN POULTRY, ITS DIAGNOSIS, PREVENTION AND CONTROL

Dr. Prabjot Singh (MVSc), Dr. Shilpa Sood(Associate Professor), Dr. Nawab Nashiruddullah (Professor), Dr. Shafiqur Rahman(Assistant Professor), Dr. Sankalp Sharma (PhD Scholar), Dr. Satuti Sharma (PhD Scholar), Dr. Deepshikha Bali (PhD Scholar), Division of Veterinary Pathology, F.V.Sc & AH, SKUAST-Jammu, J&K, India (181102).
prabjot singh <sprabjot518@gmail.com

Colibacillosis of poultry is characterized in its acute form by septicemia resulting in death and in its subacute form by peri-carditis, airsacculitis and perihepatitis. Post-mortem reveals cloudy and thickened air sacs (air sacculitis), congested and thickened liver capsule and presence of whitish layer on the capsular surface (perihepatitis), presence of fibrin layer on pericardial surface (pericarditis) and congested and consolidated lungs in the affected chickens

INTRODUCTION

Avian colibacillosis is an infectious disease of birds caused by Escherichia coli, which is considered as one of the principal causes of morbidity and mortality in all age groups. It is associated with heavy economic losses to the poultry industry causing mortality and decrease in productivity of the affected birds. E.coli can be a primary invader or it can also act as a secondary opportunist pathogen. Infectious bursal disease (IBD), mycoplasmosis, coccidiosis, newcastle disease or infectious bronchitis, as well as nutritional deficiencies all predispose the birds to this disease. It is a gram-negative, non-acid-fast, non-spore-forming bacillus that grows both aerobically and anaerobically. It causes a variety of disease manifestations in poultry including yolk sac infection, omphalitis, respiratory tract infection, swollen head syndrome, septicemia, polyserositis, coligranuloma, enteritis, cellulitis and salpingitis.

TRANSMISSION

E.coli is transmitted to chickens through ingestion, inhalation, or secondary to fecal contamination of eggs hatched in an incubator. E.coli infection has a cosmopolitan distribution. Its presence in drinking water is considered indicative of fecal contamination. Dust in poultry houses may also cause infection in poultry. Pathogenic serotypes of E. coli can also be introduced into poultry flocks through contaminated well water.

CLINICAL SIGNS

Birds affected with E. coli infection have ruffled feathers, show lethargy and poor growth. Colibacillosis can cause severe diarrhea, stunted growth, inactivity, lack of appetite and water consumption, sneezing, coughing, gasping and respiratory distress,

GROSS LESIONS

Colibacillosis of poultry is characterized in its acute form by septicemia resulting in death and in its subacute form by peri-carditis, airsacculitis and perihepatitis. Post-mortem reveals cloudy and thickened air sacs (air sacculitis), congested and thickened liver capsule and presence of whitish layer on the capsular surface (perihepatitis), presence of fibrin layer on pericardial surface (pericarditis) and congested and consolidated lungs in the affected chickens. Spleen is enlarged or may be severely congested. There may be presence of mucus, congestion and haemorrhage in the intestinal tract (enteritis). The caecal tonsils may be haemorrhagic.

MICROSCOPIC LESIONS

The liver shows coagulation type of focal necrosis, infiltration of heterophils, lymphocytes, and macrophages mainly in portal area. Perihepatitis is commonly seen and is characterized by presence of varying amounts

of fibrin seen as eosinophilic fibrillar material and heterophilic exudate. Spleen may show scattered pyknosis of lymphocytes and RE cell proliferation. Pericarditis is characterized by thickening of pericardium due to infiltration of heterophils. There may be severe congestion of lungs, infiltration of heterophils, macrophages and lymphocytes in the wall of the bronchus, peribranchiolar areas and in the alveoli. In duodenum, there is severe desquamation of intestinal mucosa, infiltration of heterophils, and other inflammatory cells like lymphocytes and macrophages in the submucosa.

DIAGNOSIS

Colibacillosis causes typical pathological lesions as described above, which can be seen during postmortem examination of affected birds. Isolation of a pure culture of E. coli from the heart, lungs, liver, or airsacs confirms the diagnosis. Aerobic culture yields colonies of 2-5mm on both blood and Macconkey agar after 18 hrs. Most strains are rapidly lactose-fermenting producing pink colonies on McConkey agar. It can also be diagnosed by FAT, ELISA and PCR technique.

TREATMENT

Antibiotics are extremely important tool in combating colibacillosis. For the treatment of colibacillosis, gentamicin, neomycin, oxytetracycline, amoxicillin, enrofloxacin and ciprofloxacin are frequently used.

PREVENTION AND CONTROL

A first step is the prevention of egg contamination by fumigating the eggs within two hours after lay, and by removing cracked eggs or eggs soiled with faecal material. It is recommended to vent the incubators and hatchers to the outside and to have as few breeder flocks as possible per breeding unit.

In chicks, contamination with avian pathogenic E. coli from the environment must be controlled by reduction and control of intestinal infection. Birds also need to be protected against pathogens that promote infections with APEC. This is possible by using Mycoplasma-free birds and protecting the birds against mycoplasmosis and viral diseases by vaccinations. Disease introduction must also be avoided by a suitable house infrastructure, the correct use of a transition zone (for changing clothes and shoes, and washing hands), and pest control: rodent faeces are a source of pathogenic E. coli. Bird density, humidity, ventilation, dust and ammonia must be controlled. The great diversity among avian pathogenic strains limits the possibilities of vaccination. Several vaccines based on killed or attenuated strains have been tested experimentally. In general, they give sufficient protection against infection with homologous strains, but heterologous strains are not usually covered. Vaccines using virulence factors like fimbriae, also give a good protection against the homologous strains possessing the same type of fimbriae.

STRATEGIES FOR REDUCING PUBLIC HEALTH HAZARDS

The following approaches can minimize public health risk: proper cleaning and ventilation of poultry houses and chlorination of drinking water. Maintaining good personal hygiene is also important like washing hands before and after handling and processing carcasses and cooking, avoiding eating raw or undercooked poultry and maintaining the correct internal cooking temperature especially.

THE EFFECT OF EMERALD-IGUSAFE WS ON GROWTH PERFORMANCE, MORTALITY AND TIME TO SLAUGHTER WEIGHT IN BROILERS

Compiled by:
Jesús Suárez, Ph.D Technical Manager, IGUSOL ADVANCE S.A

Introduction and Objective

Igusol Advance SA has developed EMERALD, which is a free flowing powder in form of micro-pearls. The product contains a standardized combination of active ingredients of cinnamon and other aromatic substances which protect the gut integrity and enhances animal performance.

Igusol Advance SA has developed IGUSAFE WS, soluble powder of plant extracts with choleretic, cholagogue and antioxidant properties which protect the liver cells reinforcing the liver functions and enhancing performance in the animal.

The aim of this study was to evaluate dietary effects of combine EMERALD and IGUSAFE on growth performance, mortality and time to slaughter BW, for reduce the lack of growth of animals and the peak of mortality in the last stage of growth, because the avoid of AGPs inclusion.

Jesús Suárez

Trial site

The present trial was conducted in a broiler farm of India

Treatments

Control feeds: Typical commercial diets with AGPs (Zinc+ Bacitracin)

Igusol strategy: Typical commercial diets **(without AGPs)**

Phase	Day	Product	Dose (g/ton)	Route
Prestarter	1 to 12	Emerald	100	Feed
Igusafe WS	100	Feed		
Starter	12 to 24	Emerald	70	Feed
Igusafe WS	50	Feed		
Finisher	25 to 42	Igusafe WS	70	Feed
14 to 42	Igusafe WS	125*	Water	
*125 g/1000l, or ½ bag per 1000l of water.				

Trial Design

A total of 12.000 one-day-old broiler chicks were divided in 2 houses of 7,250 animals and 4,500, with 2 replicates for control and 1 for Igusol. The animals were fed with the experimental diets until the marketing weight, approximately 42d.

Results and discussion

The inclusion of IGUSOL STRATEGY increased the feed intake in 0.6 g/d, increasing their growth in 1.7 g/d and improving the feed conversion in 0.06. Consequently, broilers obtained higher slaughter BW than the control group. However, according the farmer words, the most important was that the Igusol strategy also increase the growth of animals, could improve their livability, reducing the mortality from 7,2 to 2,9 %, with the important economic importance for the farmer.

Table 1. Effects of dietary addition of IGUSOL STRATEGY on growth performance of broilers.

	Control Flock	Trial flock	Differences
ADG (g/d)	56.90	58.60	1.70
ADFI (g/d)	97.86	97.28	- 0.57
FCR (g/g)	1.72	1.66	- 0.06
Mortality (%)	7.20	2.90	- 4.30
Av Bwt (kg)	2.39	2.52	0.13
Mean Age (d)	42.00	43.00	1.00
Flock Size	7.278	4.565	- 2.713.02
Total feed (ton)	27.76	19.10	- 8.66

On the other hand, when estimate the commercial impact of IGUSOL STRATEGY inclusion, was showed that it increased the feed cost in 0.32 Rs/kg, penalizing the feeding cost in 3.15 Rs/bird. However, according with the trial results, it inclusion increased the benefice in 8.53 Rs /bird, giving a ROI of 3.09 and an increase in the farm benefice of 110,100 Rs/flock of 12,000 birds.

	Control	Trial	Differences
Total live birds	6754	4.433	- 2.321
Cost of feed (Rs/kg)	24.8	25.12	0.32
Total feed intake in 42 days (kg/bird)	4.11	4.18	0.07
Total feed cost (Rs/bird)	101.92	105.08	3.15
Price per kg live wt (Rs) production cost	42,65	41.70	- 0.95
Final body wt in 42 days (Kg)	2.39	2.52	0.13
Sale price live (Rs/kg)	75.00		
Total sales price (Rs/bird)	179.25	189.00	5.44
Total margine (Rs/bird)	77,32	83.92	
ROI*		3.09	
*ROI: return of investment (Difference of margin/Difference of cost of feed)			

Table 2. Cost savings by adding IGUSOL STRATEGY in broilers.

Conclusion

The inclusion of IGUSOL STRATEGY showed higher slaughter BW, with less days of growth, with better FCR and lower mortality. In addition, its use increased the benefice in 7.34 Rs/bird, giving a ROI of 3.32 and an increase in the farm 102,360 Rs/flock of 12,000 birds.

STRESS IN POULTRY

Seema Agarwal and Naresh Singh Kuntal
Department of PathologyCollege of Vety. & Animal Sciences
GBPUAT, Pantnagar - 263145
U.S. Nagar, Uttarakhand

Normally, a bird can handle a certain level of stress easily which varies from breed to breed. In short, stress is best avoided whenever possible and a little bit of care and forethought can dramatically reduce stress in poultry making them less prone to diseases, and hence increasing their production.

Homeostasis mechanism regulates the internal environment of the body and helps in keeping the normal physiological function of the body. A deviation from normal body functions is called stress. Stress affects various factors of production and health of poultry. Body of birds have limited resources for growth, defence mechanism and reproduction. Stress is a major cause of deteriorating health in poultry which may develop vices such as feather picking, vent picking, egg eating, comb picking, etc due to it. Chickens kept in intensive conditions are constantly subjected to stress which is why farmers see such high mortality rates and have to spend large sums to keep their birds healthy and productive. Being in a stressful environment for long term makes a bird weak, affecting its immune system, and thus spreading infectious disease. Thus stress in poultry needs to be identified and managed for successful poultry production

Physiological Mechanism of Stress Regulation

Stress in poultry is an inevitable event. After a threshold level stress results in distress. Then birds show stress syndromes which are classified in three stages.

1. Stage of Alarm reaction (Neurogenic System).

This system works for short - term regulation of stress. It consists of sympathetic nervous system and adrenal medullary tissue. It regulates the response to the animal like fight or flight i.e. emergency reaction. It is characterized by increased catecholamine secretion from the adrenal medulla. These catecholamines are responsible for "Fight or Flight" reaction and cause rapid release of glucose in blood, liver glycogen depletion, increased peripheral blood circulation, increased neural activity. Catecholamines also stimulate the formation of antibodies.

2. Stage of Resistance or adaptation (Endocrine System)

This system works for long - term regulation of stress. In it there is involvement of endocrine system. It is comprised of hypothalamus - pituitary adrenal axis (HPA). It is characterized by increased synthesis and release of corticosterone which is responsible for the generation of glucose from body's reserve of carbohydrates, lipid and proteins. Other hormones like Glucagon & Thyroid hormone are also involved in stress regulation.

3. Stage of Exhaustaion

Exhaustion phase starts if the bird fails to recover from the stress stimuli and the body reserves and hormones from the adrenal gland are inadequate. Exhaustion phase leads to failure of the homeostatic mechanism and death.

Types of Stress	Causes
Climatic stress	Extreme heat and cold, high humidity
Environmental stress	Bright light, wet litter, poor ventilation
Nutritional stress	Due to shortage of nutrients feed intake problems, change in diet
Physiological stress	Rapid growth process of maturing, egg laying or mating stress
Social stress	Poor body weight uniformity, over crowding
Psychological stress	Fear, harsh care takers
Pathological stress	Exposure to infectious agent
Immunological stress	Sub - clinical infections due to persist poor bio - security and sanitation

In addition to categories of stress mentioned above other stressors are

- Handling
- Transportation
- Wet litter
- Dehydration
- Vaccination
- High ammonia level
- Toxins in feed
- De - beaking
- Lighting
- Medication

In addition to the above categories of stress, all the possible types of stressors can be broadly classified as avoidable stressors and unavoidable stressors. For better stress management there should be complete elimination of avoidable stressors and minimizing the unavoidable stressors on the birds.

Common Causes of Stress in Poultry

Some of the common causes of stress in poultry are

- Poor brooding condition - like cold water, low temperature
- Contaminated buildings / premises
- High stocking density – limited feeder and drinker space
- Temperature - heat and cold
- Vaccination, handling, weighing, grading and transport – cause pain, physical injury
- Beak trimming - causing pain and physical injury
- Lack of uniformity in body weight – differences in the packing order
- Rapid growth – strict nutritional requirement
- Post vaccination reaction – fever reduced feed intake
- Feed quality problems – variation in nutritional content
- Harsh care takers – poor husbandry
- Inadequate ventilation – deterioration of air quality
- Clinical or subclinical disease - reduced feed intake, fever, pain
- Poor litter condition – wet and cold
- Sexual maturity and egg laying – drastic stimulation with feed and light

Sign of stress

The most common stress sign are

- Aggression and fights
- Loss of weight
- Feather shedding
- Decrease egg production
- Lethargy and sluggish attitude
- Loss of appetite

Physiological indicator of stress in poultry

Several studies have done on the effects of stressors in poultry. There are some indicators of stress in birds such as

- Atrophy of thymus and atrophy of bursa of fabrics in young birds
- Enlargements of adrenal glands and the anterior pituitary
- Adrenal cholesterol depletion
- A rise level of plasma corticosterone
- A rise level of plasma insulin or glucagon
- Increased reliance on glucose as an energy source
- Hypoglycemia because of increased glucose utilization
- Decreased growth of muscles
- Increased muscle degradation
- Release of acute - phase cytokines like monokines and lymphokines
- Impairement in growth of cartilage and bone
- Synthesis of specific heat shock proteins
- Decreased feed intake i.e. anorexia
- Increased in the body temperature
- Changes in level of plasma metabolites (glucose, tryglyceride, non - estrified fattyacids).
- Changes in epinephrine content in yolk
- Changes in the numbers of circulating leucocytes profiles
- Immunosuppression
- Abdominal fat deposition
- Water belly condition i.e. ascites in high producing broilers

Prevention and Treatment

- Keep the birds clean and tidy - make the coop clean, timely change the flooring and coop
- Prevent overcrowding
- If number of birds increase than increase the number of feeder and waterer in respective ratio
- During severe heat – provide cooling facility
- During winter – provide bulbs or heater to warm the birds
- Timely vaccination – it will check the infection in the flock
- Prevent abrupt change in diet, make sure that diet is change gradually

Normally, a bird can handle a certain level of stress easily which varies from breed to breed. In short, stress is best avoided whenever possible and a little bit of care and forethought can dramatically reduce stress in poultry making them less prone to diseases, and hence increasing their production. There were studies done that measured the stress hormone 'corticosterone' of birds in different situations and it is this research that has enabled us to understand the stress stimulus.

POULTRY FARMING AND ITS FUTURE PROSPECTS

Dr. Aprana Gupta , KVK , Ropar, Dr. A P S Dhaliwal KVK , Bathinda, Dr. G.S.Aulakh, KVK , Mukatsar

Poultry egg and meat are important sources of high quality proteins, minerals and vitamins to balance the human diet. Specially developed breeds of egg type chicken are now available with traits of quick growth and high feed conversion efficiency. Depending on the farm-size, layer (for eggs) farming can be the main source of family income or can provide income and gainful employment to farmers throughout the year. Poultry manure has high fertilizer value and can be used for increasing yield of all crops.

The organized sector of poultry industry is contributing nearly 70% of the total output and the rest 30% in the unorganized sector. The broiler industry is well dominated in southern states of our country with nearly 60-70% total output coming from these states. The layer industry once again is represented more in southern states especially, Andhra Pradesh, Tamil Nadu and Maharashtra producing nearly 70% of the country's egg production. India's 75% of egg produce is consumed by the 25% population living in urban and semi-urban areas. Presently about 800 hatcheries are operating in the country.

The advantages of broiler farming are

- Initial investment is a little lower than layer farming.
- Rearing period is 5-6 weeks only
- More number of flocks can be taken in the same shed.
- Broilers have high feed conversion efficiency i.e. the amount of feed required for unit body weight gain is lower in comparison to other livestock.
- Faster return from the investment
- Demand for poultry meat is more compared to sheep/goat meat

Per capita consumption

- The National Institute of Nutrition has recommended 180 eggs and 11 kg of meat per capita consumption for our country. At present,
- Per capita availability of meat is 1.6 kg.
- Per capita availability of egg is 1.8 kg or 42 eggs.
- Average consumption of eggs in major cities is 170 eggs
- Average consumption of eggs in smaller cities is 40 eggs
- Average consumption of developed rural areas is 20 eggs
- Average consumption of undeveloped rural areas is only 5 eggs.
- While 20% of Indian population is vegetarian.

In spite of this, with the rise of middle class and increased urbanization people prefer to go for non-vegetarian food. About 3 million farmers and 15 million agrarian farmers are employed in the poultry industry that grow poultry ingredients for feed and contribute about Rs 26,000 crore to the national income. India is the fifth largest producer of egg and ninth largest producer of poultry meat. India was positioned 17th in the world poultry production. The Indian poultry production is considered to be the cheapest in the world.

Here is the brief introduction and few tips to start a poultry farm:

POULTRY FARMING

Broiler Breeding

The commercial broiler (IBL-80) developed from synthetic base population at GADVASU has a potential to attain a body weight of 1550-1600g at 6 weeks of age with a feed conversion ration of 1.8-1.9 IBL broiler has a colored plumage which fetches higher premium in the local market and is able to perform well with relatively lesser inputs. Mortality percentage is very low (2-3%). It held first position in the eight Radom Sample Tests at the National level. Dressing percentage of IBL-80 is 78-77%. This broiler is best suited for small and marginal farmers of the state. The parent stock and the commercial cross IBL-80 chicks can be procured from the university.

Layer Breeding

White Leghorn (WLH)

The commercial stock "Sutlej Layer" developed from a WLH breed at GADVASU has a potential to lay 270-280 eggs with an average egg weight of 57-58g. The mortality rate is less than 1 percentage per month. The bird is hardy and suited for small farmers with low inputs. Day old commercial and the parent stock chicks are available and can be procured from the university.

Rhode Island Red (RIR)

Rhode Island Red birds lay tinted (Brown) eggs and thus have high liking especially in the rural areas of the states. It lays 250-255 eggs in a year with an average egg weight of 53-54g. It is expected to be more popular with the small/ marginal farmers as brown eggs get sold at a premium. Since the birds tend to be heavier at the end of the lay, the income from the spent hens is also significantly higher than White Leghorn females. The RIR birds perform well on comparatively lesser management input. Fertile/ hatching eggs, day-old and parent stock chicks are available and can be procured from the university.

Tips for Poultry Farming

- Purchase day old chicks from a reputed hatchery.
- Start with chicks, free from egg borne diseases, such as pullorum and chronic respiratory disease (C.R.D)

- Fresh water and feed should be available to chicks at all the time.
- Provide 24 hours light for birds during the brooding stage.
- Vaccinate day old chicks against Merek's disease.
- Vaccinate chicks against Ranikhet (F1 Strain) disease at 6-7 days of age and again on 3-4 weeks with Mukteswar strain at 6-8 weeks and give booster dose at 15-16 weeks of age. Vaccinate the birds against Fowl pox at 6-8 weeks of age.
- At 15 to 21 days of age and again at 28-35 days of age, vaccinate the chicks against Gumbore disease.

Avoid overcrowding.

- Do not fill the feed hoppers more than one-half after the chicks are one week old.
- Do regular culling of sick, weak and unproductive birds.
- When the flock is not healthy or egg production is falling, consult the poultry specialist.

Poultry Feeding

Three strains of quails namely Punjab Quail -1, Punjab Quail-2 and Punjab Quail-3 have been developed. Average 5 weeks body weight of the commercial crosses is around 225g. Another quail strain with white plumage has also been developed and was released at the state level under the name of "Punjab White Quail". The average egg weight is around 12g and these eggs are used for preparation of pickles. Quail eggs have strong curative properties for those suffering from tuberculosis. Quail meat is tastier than chicken meat. Quail meat promotes body and brain development because it contains more phospholipids. Quail meat is considered as best balanced diet for pregnant and nursing mothers. The meat contains higher proportions of carbohydrates and vit B12. Quails are less susceptible to common disease of poultry and need no vaccination against common disease of poultry and no vaccinations against common disease as in other species. The university supplies quail eggs, day old chicks and 5 weeks old dressed/ live birds.

Commercial poultry stocks released at National/State level by GADVASU, Ludhiana
1. IBL-80 Broiler 2. Punjab White Quail
Turkey Farming

Turkey rearing is quite popular in USA and some other western countries but is gaining ground in India. Turkey is raised only for meat since the females are inefficient layers. A major portion of the turkeys is consumed on special festival days, that is, on Thanksgiving Day and on Christmas. Bronze and Beltsville Small White are the popular varieties being raised in India.

Turkey males have conspicuous black beards attached to the skin of the upper breast region. A fleshy protuberance near the base of the beak is relatively large, plump and more elastic in males than in the females. The Turkey male produces a loud sound at intervals, which is known as strutting. There is no strutting in the females.

Turkey eggs hatch in 28 days. Most of the environmental conditions for brooding of poults are the same as the chickens. The poults require double the hover space as compared to the chicken. Since poults are slow in learning to eat, they need coaxing for eating the feed. Sometimes placing coloured marbles in the feed and water help attracting the poults to the feed. Feed should be kept under bright light.

Turkey poults grow very rapidly and attain about 3.5-4 kg of body weight by 3 month of age. Turkey hens start laying eggs at the age of 30 weeks. The average egg production in turkeys ranges from 70 to 120 eggs in a year. An average turkey egg weighs about 85g which is 1.5 times as large as the chicken egg.

Layer ration, %			
Ingredient	**Starter**	**Grower**	**Layer**
Maize	52	45	46
Soybean	18	12	15
Groundnut extraction	13	08	08
Deoiled rice polish	15	33	22
Lime stone power			07
Dicalcium phosphate	02	02	02
Salt, g	300	300	300
Vit (A+B+D+K), g	15	15	15
B-complex, g	20	20	20
B12, g	15	10	10
Trace mineral, g	50	50	50

Boiler ration, %				
Ingredient	**Starter**		**Finisher**	
	I	II	I	II
Maize	54	55	63	54
Soybean meal		35		29
Groundnut extraction	35	08	28	05
Fish meal	10		08	
Rice polish				08
Oil				02
Dicalcium phosphate	01	02	01	02
Methionine , g		150		50
Salt, g		300		300
Vit (A+B+D+K), g	15	15	15	15
B-complex, g	20	20	20	20
B12, g		15		15
Trace mineral, g	50	50	50	50

Turkey requires higher amounts of protein, minerals and vitamins in the feed than chicken. Metabolizable energy (Kcal/Kg) and protein (%) requirement for turkeys at different ages are: 2900 and 28 up to 8 weeks, 3100 and 19-22 from 9 to 16 weeks, 3300 and 14-16 from 16 to 24 weeks and 2900 and 26 for adults. Turkeys are more resistance to disease compared to the chicken. They seldom suffer from vital disease like Marek`s and infectious Bronchitis.

Turkey poults can be purchased from Central Avian Research Institute, Izatnagar, and Bareilly as well as from Animals Husbandry Department, Punjab.

Emu Farming

Emu, is a flightless native habitat bird of Australia. In India emus were first imported from United States in early nineties. Approximately 3000 emu farms exist in India and started in Punjab during 2008-09. Emu are raised throughout the world and survive in all types of climates. Emu`s immune system is so strong that it hardly suffers from any disease which gives emu farming an edge over other animal rearing.

A day old emu bird is around 420g and changes color thrice. At three months emu weight 8 kg with stripes on its body. After four months emu looks chocolate brown, weigh approximately 17 kg at six month of age. At one year it again starts changing its color and weighs around 30 kg. At 2 year of age emu weight is around 40-45 kg and is around 5-6 ft in height.

A female emu is capable of reproduction between 18-24 months of age. Egg production in emus starts in colder months of the year i.e from December to February. Emu`s egg are dark green in color and weight around 45-650g. Female emu lays eggs after 3 or 5 days. During first breeding season a female emu lays 8-12 eggs which subsequently increase to 25-35 eggs. Normally emu`s lives up to 40 years and are capable of reproduction for at least 25 years. Incubation period for emu eggs is 52-56 days.

A single emu bird needs minimum of 100 sq. ft. area. 300 feet of run space is required for healthy life of the bird during first 4 months which should be increased to 100 feet, so for 20 birds minimum space requirement is 20x100 feet. A well balanced diet must be offered to emu.

Each and every part of emu body is commercially valuable. Emu fat has medicinal value. Emu meat is rich in protein with least cholesterol and plenty of iron and vitamin B12 and it is an excellent diet for heart patients. Emu skin is also very soft and is excellent leather.

Proper marketing of emu products can fetch handsome earning to the emu farmers.

HERBS AND SPICES

A SUSTAINABLE ALTERNATIVE TO ANTIBIOTICS IN POULTRY

N. Chaudhury1, S. Sathapathy1, N. Dahariya1 and S. K. Joshi2*
1Department of Anatomy and Histology, CVSc. and A. H., OUAT, Bhubaneswar – 751 003
2Scientist (Animal Science), KVK, Jharsuguda, OUAT, Bhubaneswar – 751 003
**Corresponding email: srinivas.sathapathy@gmail.com*

Introduction

The ban of antibiotic use in the threat of emerging pathogens and an ever-increasing demand for poultry products all put pressure on the need for sustainable therapeutic aids in poultry production. Herbs and spices, in their various forms, offer multiple benefits for poultry health and production. It is important to understand that they can be added to animal diets in different forms and preparations. They can be given in whole or as extracts such as essential oils or phytogenics. There are several reports of consumers who prefer poultry that's been fed natural ingredients as substitutes for antibiotics. A recent survey (April, 2018) carried out in Thailand, for example, indicated that Thai consumers are ready to buy meat products raised with phytogenic feed additives. Phytogenic feed additives are standardized mixtures of herbs and spices, as well as other plants and their extracts. Phytogenics are used for their impact on animal wellness, gut health and greenhouse gas emissions.

Use herbs and spices

They are cost effective, easily available, no known residual effects and no risk of developing antibiotic resistance in the human beings who consume the meat. Adding herbs and spices to feed has an effect on digestive enzymes which results in an overall improvement in performance parameters such as weight gain and feed conversion. They also offer several health benefits including immune stimulation, anti-bacterial, coccidiostatic, antiviral or anti-inflammatory activity and anti-oxidant properties.

Anti-microbial property

Herbs and spices contain flavonoid components such as baicalin, baicalein, limonene, cinnamaldehyde, thymol, carvacrol or eugenol, among others, which exert antimicrobial effects. They act as antimicrobial agents by changing the characteristics of cell membranes, and causing ion leakage, ultimately making microbes less virulent.

Anti-Bacterial property

They act in the bacterial cell-wall structure, denaturing and coagulating proteins.

Anti-parasitic property

Several herbs such as sage, garlic, thyme, echinacea and oregano, possess anti-coccidial properties against Eimeria species, which reduce oocyst excretions from infected birds. Curcuma longa (turmeric), through its phenolic compound, curcumin, exerts its anti-coccidial effect in birds through its anti-oxidant action on the immune system. Aqueous extract of garlic and cinnamon oil have both been shown to be effective in decreasing lice and mice infestations in chickens.

Anti-viral property

Herb catechins, which are a type of natural phenol, administered through feed or drinking water, decrease replication and excretion of the H9N2 virus from chickens in a dose-dependent manner. The anti-influenza activity of catechins is mainly due to direct interaction with viral HA and the inhibition of viral RNA synthesis. Ginseng stem and its leaf saponins significantly increase the serum antibody response to Newcastle disease and inactivated H5N1 and H9N2 vaccines in chickens.

Anti-oxidant properties

The use of herbs reduces oxidative stress in chickens. Thyme, ginger, turmeric, marjoram, peppermint and nutmeg have anti-oxidant properties as they contain compounds such as polyphenolics, alkaloids, lignans, flavonoids and terpenoids. These compounds neutralize superoxide, hydrogen peroxide and nitric oxide by increasing the production of enzymes such as catalase, superoxide dismutase and glutathione peroxidase.

Stimulation of immune system

Herbs and spices are rich in flavonoids, vitamin C and carotenoids that increases immunity in birds. Some of these plants include echinacea, liquorice, garlic and cat's claw. These plants can improve the activity of lymphocytes, macrophages and natural killer cells; they increase phagocytosis or stimulate the interferon synthesis.

Conclusion

Feeding herbs to broilers stimulate the secretion of digestive enzymes, and thus improve nutrient digestibility and enhance the performance of birds. The utilization of herbs and spices has a high economic efficiency. They possess several health-promoting properties that include antimicrobial, anti-parasitic, anti-oxidant and immunomodulatory properties. They possess several health-promoting properties that include antimicrobial, anti-parasitic, anti-oxidant and immunomodulatory properties. The improved parameters of meat yield are induced by the stimulating effect of bioactive compounds on protein and fat metabolism. Overall, herbs and spices offer sustainable therapeutic and performance aids to poultry health and production.

PARAMETERS INFLUENCING EGG SHELL QUALITY

S R Prabakar Kemin; Industries South Asia Pvt. Ltd.

Balancing the calcium and phosphorus inlayer feed formulation is of utmost importanceto maintain a betteregg production and shell quality. Anormal poultry egg contains almost two grams of calcium in their egg shell

INTRODUCTION

Indian poultry industry produces about 90 billion eggs annually with an estimated yearly sectoral growth of 6%. The per capita eggconsumptionannually in India is around 70 eggs. However,the National Nutrition Institute recommends 180 eggs per person per year.Eggs are healthy food for human consumption. Theegg quality standardsareof utmost important. The major egg quality parameters arecleanliness, soundness, texture andshape of shell; relative viscosity and freedom from foreign materials in albumen;shape, firmnessand freedom of defects in yolk.Egg shell plays a crucial role in protecting the contents of egg from microbial and physical contamination, and in controlling the exchange of moisture and gases with the external environment. In commercial layer and breeder operations, the shell qualityparameters like shell thickness and breakage strength helps in increased saleable or hatching eggs resulting in high number of viable day-old chicks production.Defects in shell quality can cause substantial lossesto a commercial egg producer.

FACTORS AFFECTING EGG SHELL QUALITY

Role of Nutrients

Balancing the calcium and phosphorus inlayer feed formulation is of utmost importanceto maintain a betteregg production and shell quality. Anormal poultry egg contains almost two grams of calcium in their egg shell. To maintain a better egg shell quality,a daily dietary intake of four grams of calcium through the dietis essential. In general, 50-60% of dietary calcium is used for theegg shell formation. A normal layer ration containing 3.56 % or higher calcium level would ensure maintenance of 20-30mg/dlof calcium levels in their blood. When layer birds are fed with a calcium deficient diet (<2% dietary levels), the layer birds utilize30-40% of its calciumfrom the bone for itsnormal egg shell formation.

Phosphorus absorption is optimal at a pH range of 5.5-6.0. The absorption of phosphorus decreases when pHis higher than 6.5. A high dietary calcium level increases the pH in gut leading to a reduced phosphorus absorption along with zinc and manganese. Correspondingly, a high plasma phosphorus level has a negative influence on the calcium absorption and mobilization. An increase free fatty acid levels in diet, decreasesthe pH and interferes with calciumand phosphorus absorption.

Mycotoxins

Aflatoxin B1 and cyclopiazonic acid are the most common mycotoxins implicated in egg shell quality. Aflatoxins were found to reduce the calcium content in egg shell of laying hens. Whereas, cyclopiazonic acid produces a marked deterioration in egg shell quality in laying hens. T2 toxin and deoxynivalenol elicit oral lesions leading to lower feed intake resulting in reduced egg production and poor shell quality.

Age of Birds

Calcium and phosphorus level must be maintained in feed of laying hens as per the age. Normal egg contains about 2g of calcium regardless of the laying hen's age and egg weight. As the hen's age advances, eggs will become larger with thinner shell. The absorption of calcium from intestine will alsobe reduced.As age advances, calcium level in feed should be increased. In phase-1 (0.5% hen day production to 40 weeks of age), 4.2g/day calcium and 0.44g/day available phosphorus must be provided. In phase-2 (above 41 weeks of age), 4.35g/day calcium and 0.42g/day available phosphorus must be provided.

Physiological Changes

In early stage of laying period, the young layer birds commonly produce soft shelled eggs. This will be reduced with the maturity of reproductive system.Sometimes, stress or fright could also lead to the eggs laid without shell.

Disease Condition

Diseases like infectious bronchitis (IB), new castle disease (ND) and avian influenza (AI) affects the egg shell quality. In IB, occurrence of misshapen eggs with thin, soft, rough and pale shells were observed. While in ND, occurrence

of misshapen eggs, rough or thin shelled eggs and reduced egg productioncould be observed. Mycoplasma gallisepticum affects the bird's respiratory tract, responsible for salpingitis, reduced egg production and poor egg quality. Whereas, Mycoplasma synoviaeaffects the oviduct of layers resulting in egg production with shell abnormalities like roughened shell surface, shell thinning and increased translucency on apical side leaving a clear demarcation zone. The proportion of affected eggscan be as high as 25% with susceptibility to breakage and cracking of eggs resulting in economic losses.

Environmental Changes

Disturbance in the plasmatic acid-base balance results insoft shelled egg production. During exposure to warm environmental temperatures, hens reacts by increasing its rate of breathing to help cool itself. This physiological occurrence causes the lowering of CO2 in blood and produces a condition termed "respiratory alkalosis". The pH of blood becomes alkaline reducing the availability of Ca++ needed for the formation of egg shell. This causes an increase in the production of soft-shelled eggs. Thus, egg shell quality is somewhat compromised during warm summer months.

- After forced moulting, the egg specific gravity, shell weight and shell thickness tend to improve or maintain same as prior to the forced moulting. Egg shell breaking strength is also improved in all strains of layer birds after forced moulting.
- Low dietary cationic-anionic balance, presence of non-starch polysaccharides (NSP) and mycotoxins results in poor egg shell quality.
- Old layer cages with rough edges and handling of eggs leads to egg breakage.

STEPS TO IMPROVE EGG SHELL QUALITY

Trace Minerals

Trace minerals are essential in the biochemical processes necessary for growth and development, including bone and egg shell formation. Zinc plays a vital role in deposition of albumen and egg shell membranes production respectively in magnum and isthmus respectively. The carbonic anhydrase, a zinc dependent, stimulates calcium carbonate deposition for egg shell formation. Manganese is essential for egg shell formation and positively affect egg shell quality. Copper, an integral part of lysyl-oxidase enzyme is important in collagen formation present in egg shell membrane. In poultry nutrition, either inorganic or organic forms of trace minerals are commonly added as feed additives to diets in improving hen's performance, production and quality of eggs. Compared to inorganic sources, organic mineral sources are reported to have several advantages including protection from undesired chemical reactions in gastrointestinal tract, easy passage intact through intestine wall and, possibly different absorption, metabolic pathway and mechanism.

- **Calcium, Phosphorus and Vitamin-D3**

Crystalline layer of egg shell consists of more than 90% calcium in the form of calcium carbonate. The dietary calcium (3.8- 4.2%) uptake, deposition and excretion are regulated by VitaminD3 and its metabolites. Vitamin-D3 is absorbed from intestine in association with fats andit requires the presence of bilesalts for absorption.

Sodium Bicarbonate

Addition of sodium bicarbonate maintains the dietary electrolyte balance,thus positively influencing the egg shell quality through better calcium absorption. During summer, sodium bicarbonate must beadded at therate of 1kg per ton of feed to improve egg shell quality.

Chromium and Vitamin-C

Chromium improvesthe productive performance in poultry due to itsimportant functions in metabolism, growth and reduction of lipid and protein peroxidation. Glucose tolerance factor (GTF), the biologically active form of chromium potentiates the action of insulin and thereby regulating the carbohydrate metabolism.Under heat stressconditions, chromium plays a crucial role in poultry nutrition, production, health andenhances the quality ofeggs.Ascorbic acidimproves the poultry performance during stress conditions by lowering of plasma corticosterone level and adrenocorticotropic hormone. When ascorbic acid was used at 100mg/kg offeed or less for commercial layers, an improvement in egg production, egg shell quality and livability was observed.Thus, a combination of chromium and vitamin-C will be more beneficial to combat the heat stress with an improvement in production and shell quality.

MANAGEMENT

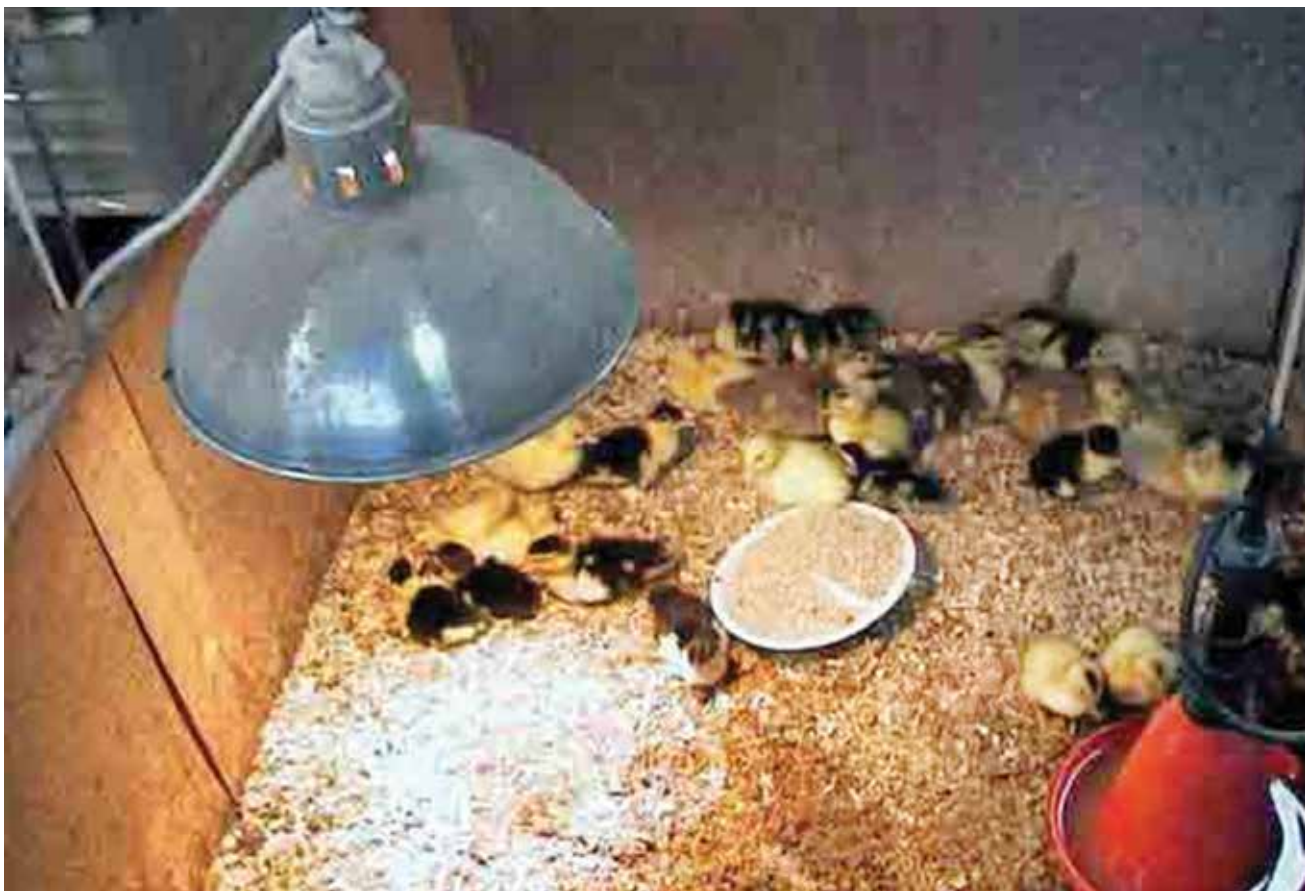
- **Analyze the raw materials for multi-toxins before the usage.**
- **In old layers, increase in egg size leads to thinning of egg shell.Hence, feed formulation should be optimizedto maintain standard egg size and avoid egg breakage.**
- **A proper vaccination for infectious bronchitis and new castle diseasesmust be followed to sustain egg shell quality.**
- **Mycoplasma prevention program should be followed in chicks, growers and layers.**
- **A practice of minimum two or more egg collection schedules daily should be followed to avoid piling of eggs and egg breakage.**

CONCLUSION

Proper nutritional managementby providing calcium and phosphorus as per the age of birds with optimal dosage of organic trace minerals in addition to Vitamin D3,is important to improve the egg shell quality.A better health management of birds with regularvaccination schedules and goodfarm managementpractices are vital to avoid egg shell quality related diseases problems. The improvement inegg shell quality parameters will avoid egg breakage losses ensuring a better return to the farmers.

ROLE OF POULTRY FARMING FOR SOCIO-ECONOMIC DEVELOPMENT OF PUNJAB FARMERS

Dr. A P S Dhaliwal, KVK , Bathinda; Dr. Madhu Shelly, KVK , Muktsar; Dr. Jagdish Grover, KVK , Bathinda



Poultry farming is the raising of domesticated birds such as chickens, turkeys, ducks, and geese, for the purpose of farming meat or eggs for food. . More than 50 billion chickens are raised annually as a source of food, for both their meat and their eggs. Chickens raised for eggs are usually called layers whilst chickens raised for meat are often called broilers. Poultry industry which provides cheap source of animal protein has taken a quantum leap in the last three decades evolving from a near backyard practice to a venture of industrial promotion. Poultry is one of the fastest growing segments of the agricultural sector in India today. While the production of agricultural crops have been rising at a rate of 1.5 to 2 percent per annum that of eggs has been rising at a rate of 8 percent per annum. India is on the world map as one of the top five egg producing countries with 55.6 billion eggs produced during 2008 (FAO). Poultry egg and meat are important sources of high quality proteins, minerals and vitamins to balance the human diet. Specially developed breeds of egg type chicken are now available with traits of quick growth and high feed conversion efficiency. Depending on the farm-size, layer -farming that can be the main source of family income or can provide income and gainful employment to farmers throughout the year. Poultry manure has high fertilizer value and can be used for increasing yield of all crops. Commercial hens usually begin laying eggs at 16–20 weeks of age, although production gradually declines from approximately 25 weeks of age. This means that in many countries, by approximately 72 weeks of age, flocks are considered economically unviable and are slaughtered after approximately 12 months of egg production,

Indian breeds

Eg. Aseel (Fighting purpose), Chitlagong, Kadacknath (Resh is black in colour) Bursa, Commercial Broiler strains:Eg. Cobb, leghorn,

RIR, Newhampshire etc., Commercial Layer Strains: Eg.RIR.

Broiler: Broilers are young chicken of either sex, which are reared primarily for meat purposes and marketed at an age of 6-8 weeks

Grower: birds during 9-20 weeks or to the point of laying is referred to as grower period.

Layer: The birds during 21-72 weeks of age for the purpose of laying eggs (egg production).

POULTRY MANAGEMENT

Poultry management usually refers to the husbandry practices or production techniques that help to maximize the efficiency of production.

Brooder Management

Brooder house: Brooder house should be draft-free, rain-proof and protected against predators. Good ventilation provides a comfortable environment without draft. All movable equipments like feeders, waterers and hovers should be removed from the house, cleaned and disinfected. Suitable litter material like saw-dust and paddy husk should be spread to a length of 5 cm depending upon their availability and cost. During the first week the temperature should be 95°F (35°C) which may be reduced by 5°F per week during each successive week till 70°F (21•10C). The brooder should be switched on for at least 24 hours before the chicks arrive. The behavior of chicks provides better indication of whether they are getting the desired amount of heat. . When the temperature is less than required, the chicks try to get closer to the source of heat and huddle down under the brooder. When the temperature is too high, the chicks will get away from the source of heat and may even pant or gasp. When temperature is right, the chicks will be found evenly scattered. In hot weather, brooders are not necessary after the chicks are about 3 weeks old.

Brooder space of 7 to 10 sq inch (45-65 cm2) is recommended per chick. Thus a 1•80 m hover can hold 500 chicks. To prevent the straying of baby chicks from the source of heat, hover guards are placed 1•05 to 1•50 m from the edge of hover. Hover guard is not necessary after 1 week. Floor space of 0•05 m2 should be provided per chick to start with, which should be increased by 0•05 m2 after every 4 weeks until the pullets are about 20 weeks of age. For broilers at least 0•1 m2 of floor space for female chicks and 0•15 m2 for male chicks should be provided till 8 weeks of age. Plentiful of clean and fresh water is very much essential. A provision of 50 linear cm of water space per 100 chicks for first two weeks has to be increased to 152-190 linear cm at 6 to 8 weeks.

Layers management

Light: Use correct lighting schedule to ensure better performance. While light period should not be increased for growing birds, it would be advantageous to increase the light periods or photoperiod for laying chicken from 22nd week of age onwards at the rate of 15 minutes per week so as to reach 16 hours of total photoperiod (natural plus artificial). When the birds have been in lay for about 6 months, the photoperiod may be increased to 17 hours per day.

Ingredients	For layers	For broilers
Maize/Wheat	25	46
Jowar/Bajra/Rice kani	10	10
Rice polish	28	-
Maize gluten	-	05
Soyabean meal	05	10
Groundnut oil cake	22	17
Fish meal	06	08
Meat meal	02	02
Dicalcium phosphate	1.5	1.5
Quick lime	0.5	0.5
Total	**100.00**	**100.00**

Cage Layer Management

The advantages of cage rearing are easy management, housing of more number of birds in limited space, clean egg production, less problem due to parasites and other diseases, easier culling, etc. Some of the disadvantages include high initial investment, wet dropping, odour and fly problem. To offset these problems, elevated cage houses are useful.

Long, continuous troughs are used for feeding caged layers. Water is supplied by channel running the length of the cage unit. The water channel is usually placed above the feed trough outside the cage. Instead of water channel, nipple drinkers can also be provided. Birds should be dewormed once in every 3 months.

Culling: Year round culling of unproductive stock will fetch better profit. Culling is based on physical characters, which reflect the physiological changes related to egg production. Culling for poor production or non-production requires handling of all the stocks in the laying pen. Since culling may be a source of annoyance to the flock thereby causing a drop in production it should be practiced in the night.

Culling from outward Appearance: The appearance of a bird though not an index of its laying ability gives an idea about its health and vigour. The main characteristic for distinguishing a layer from a non-layer is given below.

Character	Laying hen	Non-laying hen
Comb and wattle	Full, red, waxy, warm and velvet like	dry, hard cold, coarse and shrunken with white scabs
Beak	Stocky, well curved, worn -out and less yellow	Very long, thin and sharp pointed, yellow
Eyes	Bright and alert	Dull and sleepy
Ear lobes	Full, waxy and velvet like	Shrunken, wrinkled and coarse
Pelvic bones	Usually spread apart more than 2 fingers, thin and pliable	practically close together thick and stiff
Abdomen	Large, spread 3 to 5 fingers, soft and less of fat	Small usually less than 2 fingers, hard and more of fat
Vent	Full, large and moist	Small, dry and puckered

Culling on the Basis of Moulting: Moulting which refers to the shedding of feathers provides some indication about the laying capacity of a bird. Good layers not only moult late but also complete the moulting period quickly and sometimes continue to lay even during moulting. Laying flocks are generally to be liquidated after one year of production, since keeping them longer into second year of production may be uneconomical. If there is any outbreak of vertically transmitted diseases, like salmonellosis, total culling is recommended.

Financial assistance available from banks/ NABARD: Loan from banks with refinance facility from NABARD is available for starting poultry farming. For poultry farming schemes with very large outlays, detailed project reports will have to be prepared. Banks provide financial assistance for the following purposes:

a. For construction of brooder/grower and layer sheds, feed store, quarters etc.
b. For purchase of poultry equipment such as feeders, waterers, brooders etc.
c. For creating infrastructure items for supply of electricity, feed, water etc.
d. For purchase of day old chicks or ready to lay pullets.
e. For meeting working capital requirement in respect of feed, medicines and veterinary aid etc. for the first 5 to 6 months (i.e. till the stage of income generation).

The Cost of land is not considered for loan.

ECONOMICS OF A COMMERCIAL LAYER POULTRY FARM OF 2000 BIRDS	
Project	*Cost*
I. Capital Cost	**Amount Rs.**
Construction of brooder cum grower house	120000
Construction of layer house	204000
Purchase of brooder cum grower equipment	20400
Purchase of layer equipment	100000
Total (I)	444400
II. Recurring Expenditure	
Cost of day old chicks	37800
Cost of feed up to 25% laying	285600
Cost of medicines & miscellaneous expenses up to laying	20400
Insurance of sheds and equipment	2240
Insurance of birds	9450
Total (II)	355490
Grand Total (I+II)	***799890***
or say	***800000***
Margin (25%)	200000
Bank Loan	600000

Broiler production

Poultry meat is an important source of high quality proteins, minerals and vitamins to balance the human diet. Specially developed varieties of chicken (broilers) are now available with the traits of quick growth and high feed conversion efficiency. Depending on the farm size, broiler farming can be a main source of family income or can provide subsidiary income and gainful employment to farmers throughout the year. Poultry manure is of high fertilizer value which can be used for increasing yield of all crops.

The advantages of broiler farming are

- Initial investment is a little lower than layer farming.
- Rearing period is 5-6 weeks only
- More number of flocks can be taken in the same shed.
- Broilers have high feed conversion efficiency i.e. the amount of feed required for unit body weight gain is lower in comparison to other livestock.
- Faster return from the investment
- Demand for poultry meat is more compared to sheep/goat meat

Scope for broiler farming: India has made considerable progress in broiler production in the last three decades. The broiler production has sky rocketed at an annual growth rate of about 10% and stands at about 2.3 million metric tons of chicken meat (FAO 2005). The population of broiler poultry as per 2004-05 census is 199.73 million. Today India is the fifth largest producer of broiler meat in the world. Despite this achievement the annual per capita consumption in India is only 1600 grams of poultry meat as against the world average of 5.9 kg of meat.

ECONOMICS OF A COMMERCIAL BROILER UNIT	
A. Project Cost	
Capital Cost	
Construction of shed	120000
Cost of equipment	16000
Total	**136000**
Recurring Expenditure	
Cost of day old chicks	21000 (1000 birds)
Cost of feed	57222
Medicines, labour, miscellaneous charges	8670
Insurance of birds	525
Insurance of sheds and equipment	687
Total	**88104**
Grand Total (A+B)	**224104**
or say	**224000**
Margin (15%)	33600
Bank Loan	190400

All these points cover the managemental aspects of rearing the poultry birds which is helpful in diversification of agriculture system.

NUTRIGENOMICS

NUTRIENT GENE INTERACTION IN POULTRY

K. Shibi Thomas, R. Amutha, M. R. Purushothaman, P. N. Richard Jagatheesan, S. Ezhilvalavan and V. Jayalalitha
Veterinary University Training and Research Centre,
Tamil Nadu Veterinary and Animal Sciences University (TANUVAS)
7/2, Kozhi Pannai Road, Kottapattu,
Trichy – 620 023 Tamil Nadu

Lysine is the second limiting amino acid in diets for birds; its use, in lower or excessive levels, regarding the nutritional requirement of this nutrient in birds, may bring metabolic damages, which could compromise bird performance. For many decades, studies on the utilization of lysine, based on the concept of ideal protein in the diets of birds, have been developed, because of the great applicability, ease of utilization in the formulation of diets and low costs of the acquisition of L-lysine-HCl

Feed constitutes a major portion of total production costs, therefore, improvement in the efficiency of feed utilization will reduce the amount of feed required for growth, which would directly reduce production cost, increase profitability, and subsequently reduce the amount of manure produced. Genetic variation in feed efficiency still exists in broiler chickens and needs to be exploited for genetic gain. However, current improvement methods for feed efficiency (FE) are limited in the rate of annual genetic improvement because the actual feed efficiency phenotypes (FEP) defined by genotypes or gene markers are unknown.

Energy and protein are the principal dietary constituents affecting live performance and muscle development in poultry and other animals. Also, the expression of various genes responsible for vital metabolic and regulatory functions of the body is dependent on the calorie-protein status of an individual.

Methionine is the first limiting amino acid in diets based on corn and soybean meal, and its deficiency is corrected by supplementation with synthetic methionine. Differences in the determination of methionine requirement for laying hens over the years is quite understandable due to major changes in genetics, nutrition and management which the birds are subjected to, besides the effects of age, type of diet and environmental conditions.

The determination of animal requirements of amino acids based on ideal protein concept allows reducing the levels of dietary crude protein with consequent industrial amino acids supplementation in crystalline form, generally maximizing protein utilization, reducing safety margins and consequently reducing the cost and emission of pollutants into the environment.

The advancements in the knowledge of the nutritional requirements of birds, in many phases, has constantly brought improvement to the quality of the diet; firstly in the sense of reaching maximum production, followed by the search for the lowest price of the feed and for the conversion into egg numbers. Thus, the great knowledge of the metabolism of protein in birds and the production of amino acids on a commercial basis have enabled the utilization of the concept of ideal protein for the formulation of diets.

This concept can be defined, theoretically, as the exact balance of the amino acids in the diet capable of meeting, without excess or deficiency, the requirements of all the essential amino acids for production and maintenance of birds, expressing them as percentage in relation to the lysine which is adopted as reference amino acid.

Lysine is the second limiting amino acid in diets for birds; its use, in lower or excessive levels, regarding the nutritional requirement of this nutrient in birds, may bring metabolic damages, which could compromise bird performance. For many decades, studies on the utilization of lysine, based on the concept of ideal protein in the diets of birds, have been developed, because of the great applicability, ease of utilization in the formulation of diets and low costs of the acquisition of L-lysine-HCl.

The growth rate is related to the feed efficiency and the deposition of muscle mass. The efficiency of a bird to convert food into muscle is related to the efficiency of energy production. Studies show that birds with lower ATP production because of lower efficiency of ATP production from substrate in the mitochondria have poor feed efficiency or feed conversion. The efficiency in energy production

depends not only on the perfect coordination among the complexes of the respiratory chain, but also on a potent antioxidant system that protect mitochondria against the damage by the products generated during ATP production.

Methionine is required for the synthesis of glutathione, potent mitochondrial and cell antioxidant, further studies are needed to understand how the supplementation of methionine amino acid may influence the expression of the genes involved in energy production in mitochondria. Some important proteins were involved in the process of ATP production by the mitochondria: uncoupling protein (avUCP), adenine nucleotide translocase (ANT) and cytochrome c oxidase subunit III (COX III). Several researchers have demonstrated the relationship between the expression of genes encoding those proteins with feed efficiency in poultry.

Genes that affect either feed intake or body weight gain (BWG) may or may not necessarily affect feed efficiency. Thus, selection programs based on combinations of feed efficiency genotypes (FEG) or gene markers and the current traditional method will offer greater accuracy in breeding value estimation and consequently, a faster rate of genetic improvement. Some researchers have used quantitative trait loci (QTL) mapping to show complex genetic basis for feed efficiency. Feed efficiency QTL have been mapped in poultry. However, confident interval of QTL regions are usually large and further fine mapping is required to narrow the QTL region and subsequently identify the underlying genes. Genomic profiling is the first critical step to comprehensive understanding of the mechanisms that underlie the interaction of nutrition and the genome. It is well known that nutritional perturbations affect gene expression, and these perturbations have been used to establish gene networks. However, gene networks established from genetic mutation perturbations would be useful for genetic improvement since such functional mutations are the genetic raw material needed to establish trait genotypes. Limited studies have only been made on global gene expression profiling on feed efficiency. Microarray technology permits genome-wide differential gene expression analysis to uncover pathways and networks underlying feed efficiency.

The expression of growth-related hormones, such as insulin-like growth factor

I (IGF-I) and growth hormone receptor (GHR), may be influenced by other factors, such as nutrition. Amino acids play a key role in regulating some cellular processes, such as the regulation of gene expression by mRNA modulation. Still, according to these authors, the cells are able to recognize the availability of amino acids and generate changes in translational signaling pathways, which are also regulated by hormones and growth factors.

Characteristics governing animal production, such as feed and reproductive efficiency, are expressed as a function of the animal genetics, the environment to which the animal is exposed and the interaction between these two factors.

Molecular nutrition has emerged as a new area in nutritional science following both advances in molecular biology and requirements for explaining the organism's responses to nutrients at a molecular level. These include gene expression, signal transduction, and covalent modifications of proteins. Lactose operon theory, is the first example of gene regulation by a nutrient. Alterations of mRNA levels and in turn of the corresponding protein levels are critical parameters in controlling the flux of a nutrient or metabolite through a biochemical pathway. Applications of "omics", such as genomics, transcriptome, proteome, and metabolome, facilitated molecular nutrition.

Growth and egg production traits of chicken are controlled by a series of major genes and/or quantitative trait loci (QTL). Analyses of genetic markers in animals could lead to discernment of the genetic architecture of quantitative traits. There are two basic methods of QTLs identification: approach of the candidate gene and whole-genome scanning. The candidate gene approach is an effective method for finding QTLs responsible for genetic variation in the traits of interest in agricultural animal species and calibrating whether specific genes are associated to economic traits in farm animals.

Selection for production traits in the poultry industry (broiler and layer) has resulted in a rapid improvement in animal performance. For broilers, the main selection pressure has been on growth rate, feed efficiency, and carcass traits, and in layers, the focus has been to increase egg production and quality. However, although several traits have been genetically improved, phenotypic and genetic variations still exist among chicken populations due to differences in selection practices imposed by different breeding programs; therefore, improvements are required in this regard.

To obtain considerable genetic gain in a selection program, it is necessary to understand the population structure and the genetic architecture of the traits to be selected for, in order to avoid deleterious effects. With the advantage of DNA investigation technologies, the ability to identify molecular markers that are used to construct linkage maps has improved, allowing the detection of hundreds of quantitative trait loci. Several studies using microsatellite markers have identified QTLs associated with production traits across the chicken genome. Other studies that have used single nucleotide polymorphism (SNP) markers have identified genetic associations and linkage with production, health, and behavioral traits in farm animals.

PUFA-enriched diets lead to significant changes in expression of several genes in the central nervous tissue, and these effects appear to be mainly independent of their effects on membrane composition, facilitating the understanding of the beneficial effects of the ω-3 PUFA on the nervous system. The mechanism underlying increased use of the amino acid glutamine to fuel anabolic processes in pancreatic ductal adenocarcinoma (PDAC) cells using metabonomics technology.

The science of nutrigenomics has begun to use information obtained from basic studies of the genome to evaluate the effects of diet and nutrient management schemes on gene expression. Preliminary studies have shown the value of such techniques and suggest that it will be possible to use specific gene expression patterns to evaluate the effects of nutrition on key metabolic processes relating to reproductive performance.

"Nutrigenomics" refers to study of the effects of nutrients on gene expression of an individual. The study of how genes and gene products interact with dietary chemicals to alter phenotype and how genes and their products metabolize nutrients is called nutritional genomics or "Nutrigenomics". A new science seeking to understand the influence of dietary components on the Genome, Transcriptome, Proteome, and Metabolome. It is a science which study the effect of nutrients on the gene expression.

We are just entering the era of post genomic research, and molecular nutritional science is going to be of central interest as nutrients and other food components are the key factors in affecting gene and protein activities. The ultimate goals in the application of the powerful "omics" techniques are to expand our understanding of metabolism and nutrition and to determine how this relates to animal health and disease.

DEFICIENCY OF VITAMIN E IN POULTRY

Vipin1, Kundan Kumar2, Promod Kumar Soni2
1Ph.D. Scholar, ICAR-National Dairy Research Institute
2ICAR- Indian Veterinary Research Institute

Exudative diathesis is edema of subcutaneous tissues (Figure 29.6) associated with abnormal permeability of capillary walls. In severe cases, chicks stand with their legs far apart as a result of the accumulation of fluid under the ventral skin. This green-blue viscous fluid is seen easily through the skin and usually contains some blood components from slight hemorrhages that appear throughout the breast and leg musculature and in the intestinal walls

Introduction

Poultry requires at least 36 dietary nutrients at appropriate concentrations and balance. To prevent nutrient deficiencies, grain-soy based diets are typically supplemented with concentrated sources of all the nutrients. Nutrient deficiencies or toxicities most often result from errors in diet formulation or milling and these supplemented nutrients are the most probable causes of nutritional problems. Vitamin E is usually supplemented to poultry diets as α-tocopherol. In the feed, vitamin E is a very effective antioxidant; it protects unsaturated fatty acids, including the essential fatty acids, as well as many vitamins and xanthophylls. Diets that contain high levels of unstabilized polyunsaturated fatty acids become depleted of Vitamin E and are most likely to cause deficiencies.

Deficiency of Vitamin E

During vitamin E deficiency, oxidative damage may cause encephalomalacia, exudative diathesis, and nutritional myopathy (muscular dystrophy) in chicks. Vitamin E deficiency is exacerbated by low levels of dietary selenium, and vice versa. Symptoms in the vitamin E-deficient embryo include cloudy spots in the eyes, blindness, abnormal vascular system, hemorrhages, and stunting. Testicular degeneration occurs in males deprived of vitamin E for prolonged periods. Because of the similarities of vitamin E and selenium deficiency syndromes, measurement of their concentrations in blood plasma will reveal if either or both are deficient.

CLINICAL SIGN

Encephalomalaciain Chicks

Encephalomalacia is a nervous syndrome characterized by ataxia or paresis (Figure 29.5A), backward ordownward retractions of the head (sometimes with lateraltwisting), forced movements, decreasing coordination, rapidcontraction and relaxation of the legs, and finally completeprostration and death.

Exudative Diathesis

Exudative diathesis is edema of subcutaneous tissues (Figure 29.6) associated with abnormal permeability of capillary walls. In severe cases, chicks stand with their legs far apart as a result of the accumulation of fluid under the ventral skin. This green-blue viscous fluid is seen easily through the skin and usually contains some blood components from slight hemorrhages that appear throughout the breast and leg musculature and in the intestinal walls.

Nutritional Myopathy (Muscular Dystrophy)

When vitamin E deficiency is accompanied by a sulfur amino acid deficiency, chicks show signs of nutritional myopathy, particularly of the breast muscle, at about 4 weeks-of-age. The condition is characterized by light-coloredStreaks of easily distinguished affected bundles of muscle fibers in the breast, (Figure 29.7A). Similar dystrophy occurs throughout all skeletal muscles of the body in vitamin E-deficient ducks.

Table- Requirements for Vitamin E per kg of Chicken Feeds(IS 2007)

Characteristic	Broiler Feed			Layer Feed			
	Prestrater	Starter	Finisher	Chick	Grower	Layer I*	Layer II**
Vitamin E, mg/ kg, min.	30.0	30.0	30.0	15.0	10.0	10.0	10.0

BACKYARD KADAKNATH CHICKEN

Rearing alleviate poverty of poor women and landless laborers

Dr. G. Kalaiselvi & Dr. M. Malarmathi, Assistant Professor
Tamil Nadu Veterinary and Animal Sciences University, Chennai -51

Kadaknath Chicken which is also termed as Black Meat Chicken is one among the three such famous types available in the world. They are mainly available in three colors in common namely golden, penciled and dark black. Kadaknath chicken is one of the best poultry breeds of India which is native to Jhabua district of Madhya Pradesh (MP), India. Basically, Kadaknath breed is popular for its black meat and known as BMC (black meat chicken). Kadaknath chicken breed is famous for its meat quality, texture and taste and medicinal property. The demand for Kadaknath chicken is growing day by day and spread across most of the Indian states due to their excellent medicinal values. Especially these birds bear great medicinal value in homeopathy and useful in treating a particular nervous disorder. Basically, Kadaknath chickens are mainly reared by tribal communities in Bhil and Bhilala in the districts Jhabua and Dhar in the state of Madhya Pradesh (MP). The commercial scale of Kadaknath chicken raising especially in the states Kerala, Andhra Pradesh, Telangana and Tamil Nadu. Kadaknath chicken meat and eggs are in black colour.

The new Kadaknath production technology has reduced the mortality rate from greater than 50% and enhanced the survival percentage and overall profits in Kadaknath chicken farming. Kadaknath chicken have high feed conversion ratio and the birds can gain body weight of 1.10 to 1.25 kg in 100 to 125 days. Kadaknath chickens can be reared similar to country chicken or free range chicken. But it may require little more care initially to grow in controlled environment. Later they can be left freely in open field.

BLACK MEAT CHICKEN (BMC) IS AVAILABLE IN THE WORLD

- Kadaknath – Native to Madhya Pradesh, India.
- Silkie – Native to China.
- AyyamCemani – Native to Indonesia.

ADVANTAGES AND BENEFITS OF KADAKNATH CHICKEN BREED

- Kadaknath chicken black meat has good medicinal values.
- Kadaknath chicken meat is good textured and flavored.
- Kadaknath chicken breeds are adaptable to any kind of environment either cool or hot
- Kadaknath chicken meat and their eggs are sold for high price in the market.
- This bird meat contains many kinds of amino acids, and vitamins when compared with other meat.
- This meat helps to increase blood cells count and haemoglobin.
- Some of the research shows Kadaknath chicken is said to be aids in curing pulmonary problems.
- The high levels of Vitamin and Phosphorous content present in Kadaknath Chicken boosts body metabolism to a great extent providing sustained energy levels at all points of time
- Another major contribution of Kadaknath Chicken to women's health is its ability to solve menstruation related issues in them when consumed in a regular manner.
- Women who suffer from frequent abortions can benefit from it since it possesses the medicinal quality to control the same.
- The Kadaknath birds convert feed quickly into the meat (feed conversion ratio is high).
- The Kadaknath chicken eggs are used to treat headaches, post delivery problems, asthma and nephritis.
- Acute and chronic inflammation can also be cured when it is eaten regularly by people belonging to varying age groups. People who are suffering from Kidney related inflammation can benefit the maximum by eating it regularly.
- Kadaknath chicken is said to be good for women health as well.
- The tribal community in MP uses Kadaknath chicken blood in the treatment of chronic disease.
- The Kadaknath chicken eggs are also have good nutrition values and good for old people.

- Kadaknath black meat contains vitamins B1, B2, B6, B12, C and E, niacin, protein, fat, calcium, phosphorus, iron, and nicotinic acid.
- The Kadaknath breed is hardy and highly resistant for diseases and mortality is very low
- Unlike broiler chicken kadaknath can survive even on kitchen waste.
- The best advantage is, these birds meat has more protein, less fat and low cholesterol when compared to similar kind of poultry breeds.
- Kadaknath chicken weighs about 1.5 Kg after growing 6 to 7 months.
- Kadaknath is one of the rarest birds available in the world.
- Commercial large. scale farming of Kadaknath chicken defiantly give good profits if proper marketing channel is established.
- Some state governments like Madhya Pradesh and Tamil Nadu have incentive scheme for people who were interested in breeding the Kadaknath chicken.

COST OF KADAKNATH CHICKEN AND EGGS

Because of the fact that these birds have superb medicinal values, their meat cost about 600 to 800 Rs/kg. As we said above, these bird eggs also nutritious, they are sold up to 40 to 50 Rs/egg in the market.

NUTRITIONAL VALUE OF KADAKNATH MEAT

The following chart compares the Kadaknath nutritional values with other chicken breeds.

Properties	Kadaknath Chicken	Other Breeds of Chickens 18 to 20%
Protein content	25%	18 to 20%
Fat content	0.73 to 1.03	13 to 25%
Linoleic Acid	24%	21%
Cholesterol	184mg / 100gm	218.mg / 100gm

Kadaknath Chicken Breed information:

Particulars	Kadaknath
Weight of Day Old Kadaknath Chicks	28 to 30 grams
Bird Body Colour	Jet black
Price for Parent Stock (chicks)	Rs. 20 to 22
Body weight in 8 weeks	0.8 0.9 kg
Period required to attain 1 kg of body weight	13 to14 Weeks
Survival rate	95 %
Period required to attain 1.5 to 2 Kg Body weight	Like Country Chicken
Total weight (male)	2.3 to 2.5 kg
Total weight (female)	1.6 to 1.8 kg
Quality of Meat	Black like pure country chicken
Taste of the meat	It tastes like country chicken.
Meat percentage without skin (dressed)	65 %
Management/ Maintenance	Low
Are these good for Commercial or Backyard poultry farming	Good for both
Age for first egg laying	23 to 24 weeks
Broodyness	Less
Egg laying/month	11-12
Annual egg laying	120
Average egg weight	40 to 45 grams.
Egg colour	Brown
Feed required	50 kg for entire growth

TIPS TO START KADAKNATH CHICKEN FARMING

- Get good breeds of Kadaknath birds from standard government and private poultry farms
- Make sure you bring day old chicks with proper vaccinations.
- Start with 30 to 50 birds and keep increasing the bird count as you gain the experience.
- Find out with poultry department of Agriculture University and veterinary universities for chicks and feed information.
- Some state government are providing incentives on these birds breeding, avail those benefits.
- For couple of weeks birds require proper care and provide necessary shelter /light /water/feed.
- Don't start on large scale without knowing the poultry line of business.
- If you are starting a commercial Kadaknath chicken farming, make sure you establish a proper marketing channel.
- Follow the scheduled vaccination chart to avoid any bacterial and viral diseases.

CONCLUSION

Farmers, landless labor and poor widows can grow kadaknath birds in back yards. Kadaknath chickens are best suited for back yard farming rather growing on commercial scales. The meat quality and disease resistance nature of kadaknath chicken can create great revolution poultry industries

References

1. Mohan, J., K. V. H. Sastry, R. P. Moudgal, and J. S. Tyagi. 2008.Performance profile of Kadaknath desi hens under normal rearing system. Int. J. Poult. Sci. 43:379–381.

2. Panda, B., and S. C. Mahapatra. 1989. Common breeds of poultry. Pages 6–18 in Poultry Production. ICAR, New Delhi, India.

MONTHLY EGG RATES

SEPTEMBER 2019

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Ahmedabad	369	369	369	369	369	369	371	373	373	380	383	387	391	394	397	397	403	408	413	420	425
Ajmer	317	320	320	321	325	327	331	335	337	344	349	349	350	350	-	359	370	377	385	395	395
Banglore (CC)	350	340	340	340	340	340	345	345	345	350	350	355	360	365	370	380	382	386	391	400	405
Chennai (CC)	365	365	365	365	365	350	350	350	350	350	350	365	365	380	380	380	390	390	390	395	400
Chittoor	358	358	358	358	358	343	343	343	343	343	343	358	358	373	373	373	383	383	383	388	393
cochin	340	340	340	340	340	340	340	350	350	350	350	360	360	360	360	365	370	390	400	405	-
Delhi (CC)	340	340	340	340	340	342	344	346	350	356	361	367	369	371	371	375	379	384	393	400	405
E.Godavari	342	342	342	342	342	344	346	349	352	355	359	365	370	375	378	381	384	388	393	397	402
Hyderabad	315	315	315	315	315	317	319	322	325	328	332	336	340	344	348	353	358	363	368	373	378
Miraj	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mumbai (CC)	388	388	378	370	370	370	372	374	374	380	383	387	391	395	399	399	408	413	418	423	428
Mysore	355	345	345	345	345	345	350	350	352	355	357	361	366	371	376	380	385	389	395	404	409
Nagapur	320	318	316	305	310	317	320	325	330	335	338	345	347	-	-	365	375	385	-	-	-
Namakkal	362	344	344	344	344	344	346	348	351	353	355	358	361	364	367	370	373	375	378	383	388
Pune	370	360	355	350	350	352	355	358	361	371	378	383	390	400	400	403	410	415	420	425	431
Punjab	-	-	-	-	-	-	-	-	-	-	-	351	351	-	-	-	-	-	-	-	-
Vijayawada	342	342	342	342	342	344	346	349	352	355	359	365	370	375	378	381	384	388	393	397	402
Vizag	361	361	361	361	361	365	365	365	370	370	372	375	380	385	385	385	390	405	408	410	412
W.Godavari	342	342	342	342	342	344	346	349	352	355	359	365	370	375	378	381	384	388	393	397	402
Warangal	336	318	318	318	318	318	320	322	325	328	331	335	339	343	347	351	356	361	366	371	376

Source : www.e2necc.

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- Malabsorption Syndrome

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