

हिंद पोल्ट्री

HIND POULTRY

Vol. XX February 2022 No. 8

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THE BEST IN ANIMAL HEALTHCARE
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NATURAL PROTECTION

The gut and its resident bacterial flora play an important role in the development of the immune system and resistance to disease

Under natural brooding conditions, chicks obtain their gut flora from their mother & the environment

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TWENTY-FIVE & GOING STRONG

Kemin Animal Nutrition & Health – South Asia celebrates 25 glorious years



“The glorious journey of Kemin Industries South Asia”

Sometime in the middle of 1998, at the forefront of an increasingly complex world, we began the journey under the leadership of K P Philip along with a passionate 8-member team, who laid the steppingstone of a successful organization for South Asia region. As technology progressed, we decided to channel our expertise and experience into new opportunities. The hardworking and passionate 8-member team started working with a mindset focused on absolute delivery of return on investment to our valued customers.

As the business progressed, we set up a full-fledged new factory and office building at Gummidipoondi in the year 2000 and with further expansion of capacity, Kemin Industries South Asia is now having the manufacturing capacity of more than 4500 Metric Tons of finished products every month. What started with just 8 employees in 1998 has

now led to an exponential growth in each division bringing a total of 500 plus employees in the business unit. Several path breaking inventions of products and formulations have been carried out to meet the specific needs of customers in this region and with the patronage of our esteemed customers, Kemin South Asia has taken a pole position in most of the product segments.

“The deliverance of products along with services through our well-structured customer support team has always been our guiding principle in business” says R Sureshkumar, President, Kemin Industries South Asia. Over the last 25 years, the commitment to charitable activities initiated by our founders, RW and Mary Nelson, is deeply embedded in each one of us. We continue to serve the purpose with a strong sense of responsibility, building a better future for communities around the globe. Kemin Industries South Asia has

been continuously growing twice as fast as the market growth under the strong leadership of KP Philip, GS Ramesh, and now with Sureshkumar. Kemin has been awarded three times in row as a “Great Place to Work.” “What drives each of us in Kemin is the vision of transforming the quality of life of people on everyday basis and we take the opportunity to thank our business partners for their unstinted support and reposing of confidence in products and services of Kemin all through in our journey”, reiterates Dr Tanweer Alam, Marketing Director, Kemin Industries South Asia. Our pursuit and application of science, spirit of innovation, and leadership has driven us to make things better for people, animals, plants, and the planet. As we celebrate the 25 years of successful journey, Kemin puts the future in focus with transformation and sustainability as the ways to improve life, today and tomorrow. 



MONTHLY POULTRY MAGAZINE

VOL. XX No. 8 February 2022

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Ravioza Biotech, India Announces the collaboration with ADDICOO to offer Preventive Solutions to Support Immunity and Animal health



In today's challenging era of poultry production, optimal health and function of intestinal mucosa is necessary for complete utilization of dietary nutrients, genetic potential for performance and ultimately profitable production. A number of supplements and additives are being used to ensure gut health and intestinal performance. However, many of them have limitations but it is need of hour to use them or identifying a suitable innovative replacement which not only takes care of environmental microbial stress and immunity of birds but also improves overall gut health for better nutrient utilization and safe poultry production.

With regards to fulfil the need of hour, Ravioza Biotech, India announces the collaboration with Addicoo who is one of the prominent innovators of Animal Health Industry from Czech Republic. Addicoo's goal is to offer preventive solutions to support immunity and animal health and focus on more efficient use of nutrients from feed and improvement of production indicators. Addicoo stands strong globally with 30 years of experience supported by a dynamic team of employees and partnership with prominent universities from the world's best workplaces in Europe, the USA and Latin American countries. At present, our products are delivered to a number of countries on five continents. The company's strategy is to systematically invest in research and development by using active substances that reduce the excessive application of antimicrobials, improve animal health and at the same time do not harm the environment and improve the economics of animal production. Production and related processes are certified according to the GMP + standard.

The journey of Ravioza Biotech began with his founders in poultry industry with the vision of "Partner in Animal Protein Production for a Healthier Nation". Ravioza Biotech is a team of business and technical professionals, with an aim to contribute in the development of animal health industry by providing latest knowledge, new technologies and world class manufacturing support to its stakeholders and customers to improvise their business output. With the objective to bring the best of technologies and services available globally to Indian farmers. 

New Appointment

Ravioza Biotech is pleased to announce the appointment of two experienced colleagues in the company.



Dr. Chitwan Kawatra, MVSc & AH (Animal Nutrition) is hired as a General Manager (Tech. & Mkt) for India and

Nepal. Dr Chitwan has 17 years' experience of as Animal Health Business Professional and clinician. He has Worked with MNC like NMC Trading LLC Dubai, Cadila Pharmaceuticals Ltd Ahmedabad and Bayer Animal Health Mumbai, Ventri Biologicals Pune and Jubilant Organosis Noida. He has profound understanding of Sales management, Brand management, CRM, Business development and Strategic planning.



Mr. Gautam Bhadra M.Sc., DMSM, AMDP from UCD as a Sales Manager for East and Nepal. Mr. Gautam has a vast experience of

35 years in poultry industry. His last assignment was with Biomin Singapore Pte Ltd. He gained in depth knowledge of poultry industry during his previous associations with Alltech Biotechnology Pvt Ltd (USA), Glaxo Smith Kline and VH Group of companies. His core competencies are Strategic digital marketing, Soft analytical skills, Brand building, Sales & Distribution management. He has been considered a wonderful trainer during his tenure. RAVIOZA Biotech management is very excited to have both of them onboard. Management added that Ravioza Biotech is growing significantly and is on expansion mode. RAVIOZA Biotech's high-quality portfolio includes Klinofeed, Bioceutox, Gut Pro 21, Mycotyl 25, Elixir, Levozithro BH, Chick Pro, Raviomulin, Enranguard and many more. 

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Enhancing Protein Digestion



Dr. Koushik De
Director, Technical Services -
SCA Novus International



One of the most significant ways of enhancing nutrient digestibility is the use of enzymes. In most practical diets for poultry, the three most expensive nutrients are: energy, protein, and phosphorus. Although we have managed to procure successful commercial enzymes that enhance the efficiency with which birds derive energy and phosphorus from their feed, the animal nutrition industry has not been so successful in the case of protein. In truth, early attempts have been more than disappointing for many enzyme producers.

There are several reasons for this, including inadequate research and development, difficulties in producing a commercially viable enzyme, and of course, the uphill battle against the naturally high digestibility of most conventional feed ingredients. Birds are already digesting their feed quite well! However, the largest failure must have been the lack of resources and perseverance.

Why a protease?

The most obvious question that we must first answer is why poultry diets require such an enzyme. The answer is quite clear when profitability comes into the picture particularly in today's scenario where the raw material prices are sky rocketing. Today, the technology of producing an enzyme has advanced to such a high degree that it makes it economical to use enzymes even under the most unfavorable conditions in terms of feed ingredient prices. For example, the addition of protease enzyme has been shown to reduce feed cost on average by 5%, even after considering the

actual cost for the enzyme. In today's tight financial times, a 5% reduction in feed cost alone can be the key to survival for many operations worldwide.

This reduction in feed cost is achieved by means of lowering protein (amino acids) specifications to consider the improved digestibility of protein in natural ingredients. Thus, the inclusion level of soybean meal, one of the main protein-rich ingredients is reduced, and of course, the need to add synthetic amino acids is also reduced significantly. Of course, the exact savings depend on the actual ingredients used and their prices.

Research has also shown that the use of protease enzyme also improves overall animal performance. This is the result of the beneficial effects of a low-protein diet, which minimizes the metabolic strain of excreting surplus nitrogen, with the added benefit of leaving more dietary energy available for growth. This effect is not a new discovery, unique to proteases, but something well known to scientists for many years and applicable to all monogastric species.

Another indirect benefit from the use of a protease that improves protein digestion is that nitrogen excretion in the environment is markedly reduced which is a great advantage for the producers during the winter months. Thus, protease enzyme not only enhances the digestibility of protein, leaving less natural protein undigested, but the low-protein diets used in conjunction with the enzyme are better balanced in terms of amino acids, leaving less surplus to be disposed of through metabolism.

On average, protease enzyme enhances protein & amino acid

digestibility by 3-7% and as such it should be expected to reduce nitrogen excretion significantly. Again, these are averages obtained through numerous research trials and field observations in the past ten years of development and use in the field. Actual numbers will differ according to ingredient selection and current dietary protein specifications.

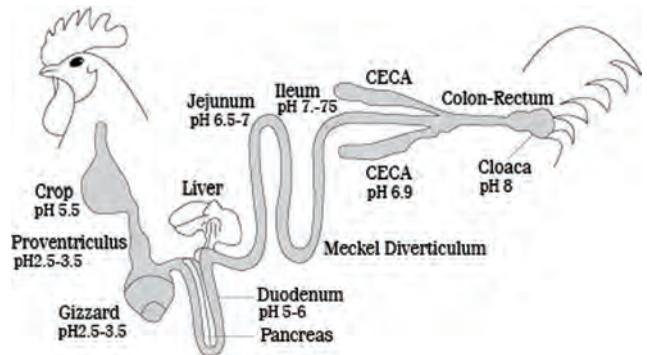
The main reason broiler producers as well as feed producers require a protease enzyme is profitability. Protein raw material prices have shown a sustained upward trend over the last few years. Despite abating a little in the last few months, the general consensus of independent observers is that prices will continue to increase in the future. This is the consequence of consumption exceeding supply on account of demand from emerging economies, and the impact of bio-fuel production on the composition of harvested areas across the world. A protease which can consistently improve the digestibility of amino acids in such materials, thus reducing their inclusion level in feed while maintaining current levels of animal performance, is therefore economically very attractive.

Direct cost savings at the feed mill, however, are by no means the only reason for considering a protease (Figure 1). When a suitably efficacious protease is used, it can be an important contributor to the continued economic viability, sustainability and consumer perception of the broiler industry.

The recent development of unique feed protease specifically selected for application as a feed enzyme, has overcome many of these issues. Unlike most other commercially available proteases, it is produced from a genetically modified strain of *Bacillus licheniformis*. In the selection process, factors such as the ability to degrade many different feed proteins; the need to complement the endogenous protease enzymes; activity after exposure to the low pH conditions of the gizzard and proventriculus; and stability during feed processing were all considered.

pH stability:

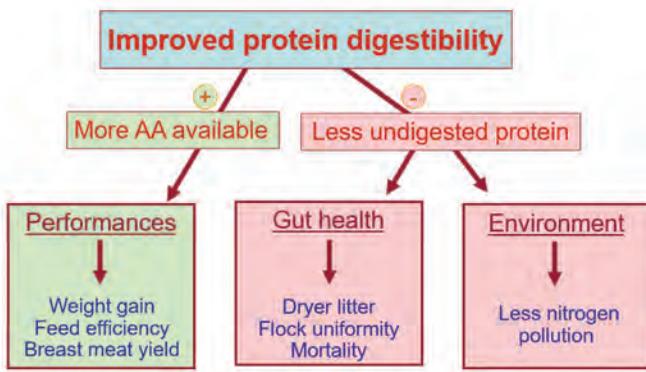
Probably one of the most important criteria for success of a protease in broilers is good stability under low pH conditions found in the bird's stomach. The level of viable enzyme reaching the ileum is thus also limited. In contrast, with *Bacillus licheniformis* derived protease, stability at low pH is greatly improved, ensuring sufficient enzyme activity in the small intestine to give the desired hydrolytic effect.



For a protease to work successfully, it is essential that it should complement the endogenous enzymes. The bird's stomach and small intestine already produce pepsin and pancreatic proteases, respectively. The exogenous protease must work in synergy with these enzymes to obtain the optimum benefit in all but the very young bird, where endogenous levels may be limiting.

Flexibility of use:

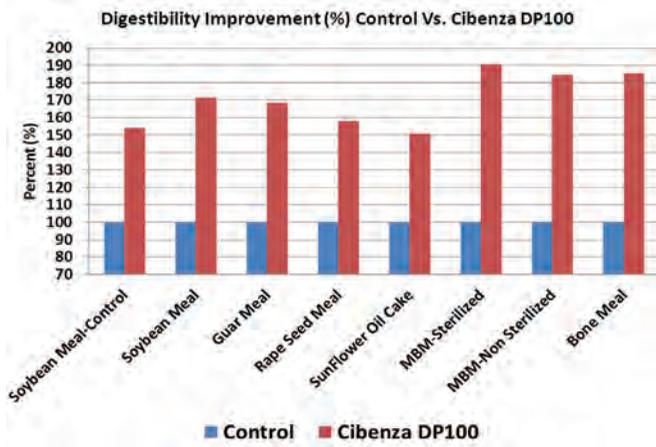
For a protease to be commercially useful it must be possible to use it flexibly in a diverse range of diet types. The ability to improve the digestibility of protein from as wide a range of feed ingredients as possible is therefore important. Protease should have the potential to improve digestibility of protein in a wide range of ingredient sources in vitro. Such improvements should however not just be obtainable in vitro but also in vivo. In vivo, both ileal and faecal amino acid digestibility studies have confirmed the significant improvements in



Not all proteases are the same:

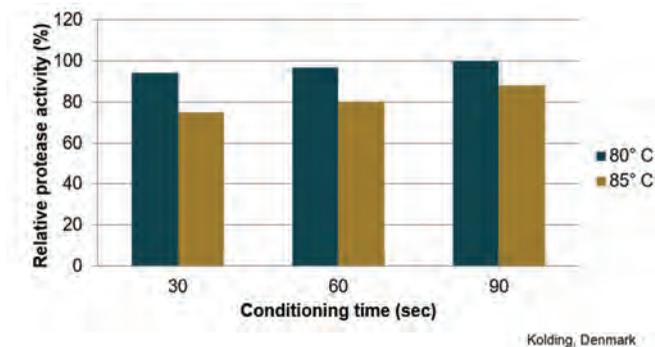
For a protease to be successful in feed it should, like any other enzyme, be selected and developed with that specific use in mind. Unfortunately, many of the first proteases entering and, in many cases, still available for use in the feed industry were developed for other purposes. non-specific alkaline proteases initially derived from *Bacillus subtilis* and developed for the detergent industry, with characteristics which render them less effective in feed.

digestibility for a wide range of different raw materials when Protease enzyme is added.



Processing stability

As the conditioning time and temperature during the production of pelleted broiler feeds becomes ever higher and longer to ensure compliance with increasingly stringent food and feed safety requirements, stability of feed enzymes under more extreme conditions is increasingly essential. To this end, for a protease to be successful, thermostability is a must. Protease enzyme is consistently more stable at each of the conditioning times and temperatures tested, demonstrating its superior stability even under more demanding conditions.



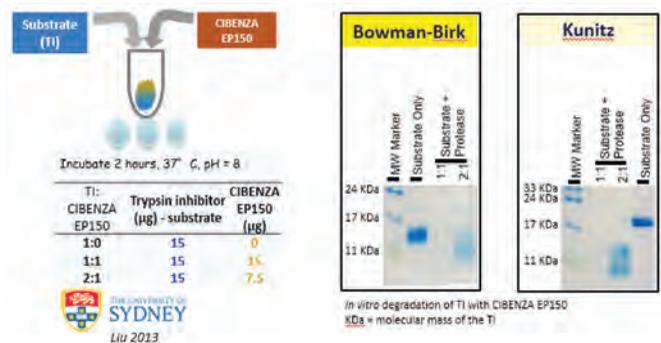
Reducing Anti nutritional Factor:

Soybean meal (SBM) is the most important source of dietary protein for poultry it itself contains some antinutritional factors like Trypsin Inhibitor (TI). Although TI is reduced by heat treatment, overheating has a negative impact on protein quality and amino acid digestibility. Exogenous Protease enzymes can improve digestibility of feedstuffs, lower feed costs and improve animal performance. Proteases improve animal performance and nutrient digestibility by decreasing digesta viscosity, improving endogenous enzyme activity and decreasing pancreas weight (Bedford and Classen, 1993; Bedford and Schulze, 1998; Erdaw et al., 2017a,b; Yan et al., 2017).

Product type	Unit	Soybean seeds	SBM	Enzyme treated SPC	Alcohol extracted SPC	SPI
Humidity	%	10 - 12	10 - 12	6 - 7	6 - 7	6 - 7
Crude protein	%	33 - 17	42 - 50	55 - 60	63 - 67	>85
Fat	%	17 - 20	0.9 - 3.5	2.5	0.5 - 3.0	0.1 - 1.5
Ash	%	4.5 - 5.5	4.5 - 6.5	6.2 - 6.8	4.8 - 6.0	2 - 3.5
Oligosaccharides	%	1.4	1.5	<1	<3.5	<0.4
Starch	%	4 - 4.5	4.5 - 5	<0.3	1 - 3	<0.2
Raffinose	%	0.8 - 1	1 - 1.2	<0.1	<0.2	<0.1
Trypsin inhibitor TIA	mg/g CP	45 - 60	4 - 8	1 - 2	2 - 3	<1
Glycinin	mg/g	150 - 200	40 - 70	<0.1	<0.1	<0.01
β -conglycinin	mg/g	50 - 100	10 - 40	<0.1	<0.1	<0.005
Lectins	ppm	50 - 200	50 - 200	<1	<1	<1
Saponins	%	0.5	0.6	0	0	0
Phytic acid bound	%	0.2	0.6	0.6	0.6	-

SBM = defatted soybean meal; SPC = soy protein concentrate; SPI = soy protein isolate.
Adapted from: Hansen (2003) and Peiker (2001)

The determination in the laboratory of the TI content of SBM and its relationship with AA availability is tedious and time-consuming and provides inconsistent results. Also, the traditional processes of treating SBM can't remove the anti-nutritional factors to a safe level. Therefore, use of exogenous protease is very effective in reducing the deleterious effect of TI in SBM. Liu et al., in 2013 conducted a study wherein they used a protease enzyme (CIBENZA EP150) with different levels of TI and found that protease enzyme was able to destroy almost all trypsin inhibitors (both Bowman-Birk & Kunitz TI) present in soyabean meal (at 1:1 ratio) and destroy substantially even in higher concentration (2:1) of TI as well.



CIBENZA[®] EP150 can destroy almost all trypsin inhibitors present in soyabean meal (at 1:1 ratio) and destroy substantially even in higher concentration (2:1) of TI as well

Conclusions:

The benefits of including a protease enzyme in broiler diets are confirmed in numerous published reports. Such research shows that this protease can improve the protein digestibility of a wide range of natural ingredients by 3-7%. Such improvements translate into significant cost savings per ton of feed and are achieved without any compromise on animal performance.

Poultry Dressing Plants

Type of Plants	Models & Capacity upto
Mini Plants	4 Models- 2000/ Day
Hybrid Plants	2 Models- 4000/ Day
Container Plants	2 Models- 4000/ Day
Conveyerised Plants	6 Models- 2000/ Hour



Poultry-Waste Rendering Plants

Eliminates waste, makes profit

Type of Waste	Waste Capacity
Hatchery Waste	1 T - 2 T / Batch
Layer Manure	10 T & 20 T / Day
Slaughter Waste	250 - 3500 Kg/ Batch
Chicken Fat	1 T - 2 T / Day





Venworld Conducted Technical Seminars in Ajmer & Kurushetra on Current Disease Challenges in Poultry and their Strategies to Control

Venworld conducted technical seminars in Ajmer & Kurushetra on 8th & 14th December 2021. The speakers were Dr. Prakash Reddy, DGM, Technical Services-All India, Dr. Sunil Nadguada DGM-Technical services ALL India & Dr. H. K. Rohilla DGM-Venco Technical Services -North India

Dr. Prakash Reddy highlighted the current disease challenges in poultry and their strategies to control.

He started with the lessons to be learnt by the poultry industry from the COVID-19 pandemic, which includes:

1. The sensitivity of poultry industry to react to rumors, without checking the facts about zoonotic diseases.
2. Biosecurity: Lockdown (curfew), sealing of State and National borders, Quarantine, Masking, Social distancing etc. to reduce the spread of the virus.
3. Age resistance.

4. Susceptible population with comorbidities complicating the disease condition.
5. Importance of the next generation diagnostics with respect to accuracy and speed of diagnosis.
6. Virus variation creating a moving target.
7. Vaccines and vaccination:
 - a. Challenges with the vaccine production and technology.
 - b. Herd immunity by vaccination to reduce the spread of the virus and emergence of variants.
 - c. Vaccine safety and efficacy.

- d. Limitations of vaccines in preventing the disease, but not infection.
- e. Speed of Vaccination coverage.

Further, correlated the challenges with the poultry corona viruses (Infectious bronchitis virus) variations in India and the novel strategies to control. A comprehensive approach to control Respiratory disease complexes, specially related to control of Mycoplasmas.

Lastly, Immunosuppressive diseases related to IBD and CAV were thoroughly discussed during the sessions.





Dr. H. K. Rohilla threw light on “ How to achieve peak and persistent production in broiler breeders” wherein he highlighted the management /nutritional practical tips to be followed in order to prevent the issues faced in various stages of a broiler breeders life viz. Brooding, Growing, Pre-lay and laying phase like:

1. Tips to maintain proper uniformity of the flock.
2. Importance of precise feed formulations.
3. Intussusception issue in growers and preventive measures to be followed.
4. Precautions to be followed during pre-lay period.
5. Calcium tetany and its remedy/preventive measures.
6. Role of ND & IB vaccination in broiler breeders

Dr. Sunil Nadgouda presented on “Optimizing layer nutrition and management for better productivity and profitability”

1. Essential for good egg production like nutrition, management and health.
2. Important nutrient consideration for optimizing layer hen productivity.
3. Regular management practices like feeding, lighting, body weight and uniformity were discussed in detail.
4. Importance of pullet development and their body weight at point of lay.
5. Fulfilling precise nutrient requirement is very essential for optimizing production.

Manufacturing of feed in easy and simple way with Venky’s 5% layer composite premix was discussed. Venky’s 5% Eggxtra layer composite premix helps to optimize cost and improve overall health and productivity of the laying hens. Broiler breeder, Layer Customers and technical persons attended the seminar and appreciated the information. Mr. Harjit Padda, DGM, Marketing North Zone welcomed the customers.

Mr. Shashibushan Zonal Manager North Zone 3, gave the vote of thanks .All the technical & other sales r team participated in the meeting. 

PERSON WITH A VISION

Dr. Christopher E. Nelson, President & CEO KEMIN

Dr. Christopher E. Nelson President & CEO of

KEMIN through his visionary ability and in depth knowledge of corporate world in Animal Health Sector guided the KEMIN under his leadership to grow 10 times in size. The



KEMIN now employs more than 2,500 people worldwide. Kemin touches more than 3.8 billion people across the globe every day with products for specific health and nutrition solutions. In 1980, Dr. Nelson began his career with Kemin as director of research and development. During his tenure, Dr. Christopher E. Nelson and his team pioneered the process of isolating and purifying the antioxidant molecule lutein for human consumption in supplements and fortified foods. Now, over 60 million people consume lutein daily through supplements and fortified foods. Among the many commercial and scientific advancements at Kemin, this distinguished breakthrough launched the company into new markets.

Dr. Nelson has been described as an industry pioneer, holding 15 patents and authoring numerous peer-reviewed, published research studies. He received his bachelor’s degree at Northwestern University and his Ph.D. in biochemistry and biophysics from Washington State University. He continues to have a passion for science education and is served as the Board Chair of the Science Center of Iowa. In his first term, he helped lead a successful development effort for construction of the \$62 million Science Center. Nelson is also the owner of MedPharm Iowa, the only licensed medical cannabis manufacturer in Iowa. Dr. Nelson was recognized as one of the top 100 CEO Leaders in STEM (Science, Technology, Engineering, and Math) by STEM connector at the 2013 U.S. News & World Report’s STEM Solutions Summit. He had also been awarded the Life Time Achievement Award by Indian Poultry Journalists’ Association in Hyderabad- India.

Hind Poultry is proud of choosing Christopher E. Nelson as its “Person with the vision”. 

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Government Committed for the Growth of Poultry & Livestock Sector through Special Funds & Financial Assistance



Ricky Thaper

Treasurer, Poultry Federation of India

Livestock sector is a critical sub-sector of agriculture in the Indian economy. According to the Economic Survey (2021-22) tabled in the parliament recently, the livestock sector consisting of dairy, eggs and meat, grew at a Compound Annual Growth Rate of (CAGR) of 8.15 per cent. As per the estimates of National Accounts Statistics, 2020, the contribution of the livestock sector in the total Gross Value Added (at constant prices) of agriculture and allied sectors grew from 24.32 per cent in 2014-15 to 29.35 per cent (2019-20). The livestock sector contributed 4.35 per cent of total GVA in 2019-20. According to FAOSTAT data of 2020, India ranks third in egg production and sixth in meat production in the world. India's egg production has increased from 78.48 billion in 2014-15 to 122.11 billion in 2020-21. The per capita availability of eggs is at 91 eggs per annum in 2020-21 (Provisional). Meat production in the country has increased from 6.69 million MT in 2014-15 to 8.80 million MT in 2020-21. According to Basic Animal Husbandry Statistics, 2020 states that India's poultry meat production was 4.34 million MT, contributing almost 50% of the total meat production in 2019-20.

The government gives thrust on infrastructure development for poultry and livestock sector in the union budget (2022-23) and specialised schemes and funds to boost the poultry industry which plays a critical role in the Indian economy.

Allocation for Livestock sector in union budget (2022-23):

Keeping in mind the importance of livestock, Union Finance Minister Smt. Nirmala Sitaraman in the Union Budget (2022-23) has allocated Rs 6,407 crore for the Ministry of Fisheries, Animal Husbandry, and Dairying, which is an increase of 44 per cent from the 2021-22 allocation. Commenting on the union budget (2022-23), Union Minister of Fisheries, Animal Husbandry, and Dairying, Shri Parshottam Rupala said that 95% of livestock farmers are concentrated in rural India, infrastructure development under the

'Vibrant Villages Program' will play a significant role in enhancing market access for these poultry and livestock farmers. He stated that the reduction in alternate minimum tax for cooperatives from 18.5% to 15% as announced in the union budget (2022-23) is indeed a significant announcement that would provide a level playing field between cooperative societies and companies. The incentivizing digital banking, digital payments & fintech innovations as announced in the union budget will have a ripple effect in the poultry and livestock sector.

According to Shri Atul Chaturvedi, Secretary, Department of Animal Husbandry & Dairy (DAHD), said, "in the budget (2022-23), allocation for livestock has been increased by 40%, and central sector schemes have been increased by 48%, indicating the government's commitment to the growth of poultry and dairy farmers.

Schemes which Poultry sector could take advantage:

To support the poultry and livestock sector, DAHD was implementing the Entrepreneurship Development and Employment Generation (EDEG), as a component of the National Livestock Mission (NLM). Poultry Venture Capital Fund was implemented as an activity under the EDEG. The salient features of realigned NLM scheme include employment generation, entrepreneurship development, increase in per animal productivity and thus targeting increased production of meat, eggs, milk and wool. The scheme also envisages

increase in productivity development through breed improvement. The scheme also focuses on increasing availability of fodder and feed.

After union cabinet approval in June 2020, Animal Husbandry Infrastructure Development Fund (AHIDF) worth Rs 15,000 crore was established and implemented from 2020-21. AHIDF aims at incentivizing investments by individual entrepreneurs, private companies, Farmers Producers Organizations (FPOs) and companies for establishing meat processing and product diversification, infrastructure and Animal Feed Plant, Breed multiplication farms and Breed improvement technology and the dairy processing and product diversification infrastructure.

Under AHIDF Rs. 13,500 crore would be the loan to be disbursed by the scheduled bank and Rs.1500 crore will be the end borrowers contribution. Out of these Rs.1623 crore will be provided as interest subvention of 3 per cent over a period of 10 years for repayment of loan during 2020-21 to 2030-31. Rs 750 crore will be credit guarantee to be managed by NABARD for which Rs.75 crore will be provided by the DAHD to NABARD for 10 years.

So far 206 projects with an estimated cost of Rs.2813 crore have been approved under AHIDF with a loan of Rs.2014 crore. Projects worth Rs.911 crore for setting up animal feed plants, Rs.227 crore for meat processing and Rs 874 crore for setting up of dairy processing plants have been approved. Establishment of animal feed plants also include activities such as bypass protein unit, total mixed ration block making unit, mineral mixture plant, animal feed testing laboratory and integrated poultry meat processing units.

The leading poultry industry players have welcomed the “pro-farmer friendly” announcements by Union Finance minister Smt. Nirmala Sitharaman and several schemes being implemented for the livestock sector as this will boost our agricultural economy and will accelerate benefits with other sectors connected to agriculture, poultry, farming, animal husbandry, food processing etc. Capital and technological infusion into these sectors will definitely

help build a long-term vision to yield greater results in the coming years,”.

DAHD is implementing a scheme - Assistance to States for control of Animal Diseases (ASCAD) under the Livestock Health and Disease Control (LH&DC) scheme which covers the vaccination of economically important poultry diseases, including control and containment of emergent and exotic diseases. Under the LH&DC Scheme financial assistance is provided to the States for up gradation of Diagnostic Laboratories at the district level. In addition, there are six Regional Disease Diagnostic Laboratories for prompt and effective diagnosis of different Livestock and poultry Diseases.

According DAHD data, Rs.13.87 crore had been released to states and UTs under ASCAD for the FY 2020-21 and 2021-22 for control and containment of Avian Influenza including compensation to farmers whose birds have been culled, poultry eggs and Poultry feed has been destroyed

The Central Poultry Development Organizations are carrying out Training programs to increase skill of entrepreneurs in the field of Poultry and Livestock. The Department is also assisting the State Government to impart training on Poultry, Sheep, Goat, Pig farming to enhance technical knowledge and entrepreneurship development.

Under this component, the establishment of a composite Poultry unit having parent farm, mother unit and Hatchery unit can be established. Further, to increase the Poultry production under NLM financial assistance is provided to States and Union Territories Governments for implementation of Rural Backyard Poultry Development and Innovative Poultry Productivity Project. These programs envisage the components which take care of the shelter, feed, medicine, equipments, litter etc. to improve the living conditions of the Poultry and Livestock.

Overall the government has ensured that the livestock sector gets necessary financial help for ensuring sustainable growth of the sector. 

As per CAGR the probiotic market expected to witness the compound annual growth rate of 7.0% dominated by China, Japan and India

Increase in world population is eminent, and as current population trends exponentially rise, projections state more than 9 billion people will inhabit the earth by 2050. Today's consumer eats a higher proportion of meat and animal products which has resulted in the overall growth of poultry production and its productivity across the globe. The increase of productivity in the poultry industry has been accompanied by various impacts, including emergence of a large variety of pathogens and bacterial resistance. These impacts are in part due to the indiscriminate use of chemotherapeutic agents as a result of management practices in rearing cycles. Probiotics play a very important role for prevention of bacterial diseases in poultry, as well as its potential role in the growth performance and immune response of poultry, safety and

wholesomeness of dressed poultry meat evidencing consumer's protection. Probiotics are also increasingly supplemented into poultry feed for broilers and chickens. As per CAGR the probiotic market is expected to witness the compound annual growth rate of



7.0%. Attributed to the increasing demand for dietary supplements the future probiotics market of Asia-Pacific is going to be dominated by China, Japan and India. Effects of dietary supplementation of probiotics on growth performance of poultry animals have also been extensively investigated from time to time and most of the studies indicate

that probiotics display great efficacy in promoting animal growth. Dietary inclusion of probiotics also result to increased body weights and to gain better FCR. probiotics supplementation to diet also improve feed intake, feed efficiency, and carcass yield of broilers. There is no doubt that probiotics supplementation can also improve meat quality of broilers particularly nutrition, tenderness, odor, tastes and flavor characteristics. In view of this, the concept of probiotics as feed additives has gained much attention and support. Significant work and studies have increasingly demonstrated that probiotics provide means to a balanced gut microbiota in poultry, maintaining health status in broilers, preserving gut condition and improving immune system as well as enhancing nutrient absorption, which are all crucial and needed to promote growth of broilers. 



Job Opportunity

RAVIOZA Biotech announces following vacancies to be filled on urgent basis.

HQ	Post	Requirements
Karnal/Panipat	Area Sales Manager	<ul style="list-style-type: none"> • Minimum 5-10 years of experience in respective poultry market • Strong sales record • Key clients handling experience • Education : Graduation or Equivalent
Ludhiana	Area Sales Manager	
Raipur	Area Sales Manager	
Pune	Area Sales Manager	
Lucknow/Gorakhpur	Area Sales Manager	
Bangalore	RSM	
Coimbatore	Area Sales Manager	

Interested candidates can send their CV to following contact details-

Dr Chitwan Kawatra - email kawatrachitwan@gmail.com, Mobile 7300303154

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1	HOUSE TYPE-1	45'x330'	21,808	475/-	1,03,58,800	2	13	6	34,02,048	3.0 yrs
2	HOUSE TYPE-2	45'x270'	17,654	528/-	93,21,312	2	13	6	27,54,024	3.4 yrs
3	HOUSE TYPE-3	45'x220'	14,192	576/-	81,74,592	2	13	6	22,13,952	3.7 yrs

- * Prices are valid until 31st of March, 2022 and exclusive of taxes, erection, installation, transportation charges, subject to any revision from the company.
- ** ABW- (Average Body Weight) as per industry average norms .
- *** GC- (Growing Charges) will be revised post completion of every 8 batch based on the electricity charges and labour charges.

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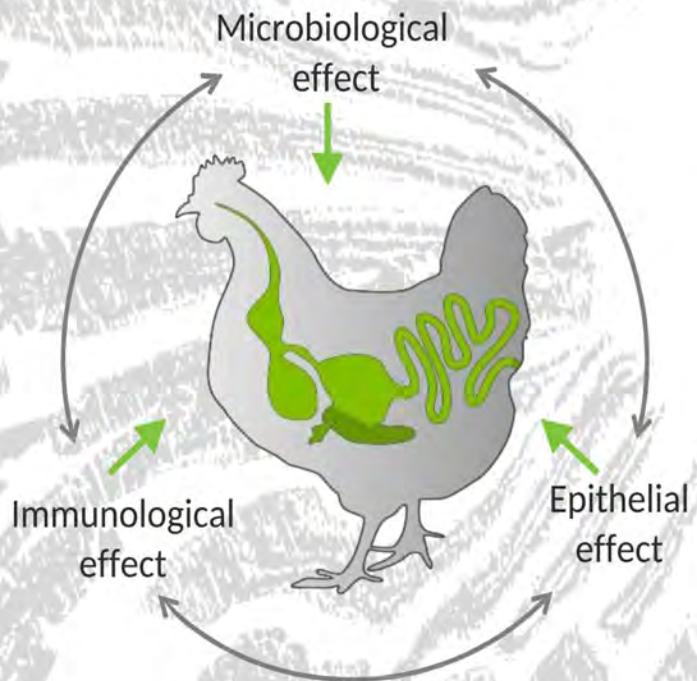


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Vitamins are chemical entities which are essential in small quantities for maintaining the proper metabolic process in animals and birds. These essential nutrients can't be synthesised at all or not in sufficient quantities. So, there is need to give these vitamins to animal and bird in feed as daily allowance.

Vitamins are two types as Fat soluble and Water soluble, fat soluble are A, D, E and K and water soluble are B complex and Vit C.

Vitamin D is fat soluble vitamin which regulates calcium haemostasis, which is vital for normal growth, bone development, egg shell formation and routine metabolic processes in birds. Vitamin D₃ production process can be activated when sunshine spreads on bird skin. But due to present extensive farming and managerial practices and housing method, it is difficult to get sunlight to form the Vit. D process naturally in birds. So, there is need to supply proper Vit D sufficient levels of Vit D through feed or water.

Two major forms of Vit D are available i.e., Ergocalciferol or Vit D₂ and Cholecalciferol or Vit D₃. Ergocalciferol is derived from plant steroid, ergosterol and Cholecalciferol is product from the precursor 7 dehydrocholesterol which further form absorbable Vit D conversion in animals and birds. In birds pre-vitamin 7 dehydrocholesterol is derived from cholesterol or squalene, and they present in large quantity in skin of the animals & birds.

The provitamin 7-dehydrocholesterol which is present in epidermis of skin get converted to cholecalciferol with UV irradiation from sunlight, then it get absorb in blood circulatory system after binding it with Vit D blood transport protein (DBP).

As of this Vit D form is not biologically active and must be converted to biologically active form which takes place in liver and kidney before it absorbs in system.

Once Vit D reaches to liver for transformation, in which a microsomal system of hydrolysate to produce 25-hydroxy-vit D[25-(OH)D].

This metabolite is major circulating form of Vit D in blood, which is transported to kidney with Vit D transport globulin. In kidney it is converted into various compounds including 1,25-(OH)₂D₃, which is also known as Calcitriol.

Then this compound is transported to the intestine, bones or other organs where it is involved in metabolism of calcium and phosphorous.

In maintaining the normal blood calcium levels, Vit D acts along with Parathyroid hormone. Vit D facilitates absorption of calcium through intestine.

Vit D plays important role in regulating Calcium haemostasis which is also required for skeletal development, embryo development, immunity and basic metabolism processes. It becomes a vital nutrient in breeders, layers, broilers and chicks.

Bio D

In animal nutritional supplement market Huvepharma's Bio D product outperform due to its uniqueness. The product Bio D is 25-hydroxy vitamin D₃ (Calcitol) which is manufactured by bacterial fermentation process with use of natural ingredients. As it is manufactured by natural process its bioavailability is TWO times more than its synthetic form products available in the market. It is very stable during long storage and pelleting temperature with 98.6%

recovery at temperature 120° C for 30 min.

In market various products of active Vit D₃ are available as feed additives. Active Vit D₃ can be destroyed with over treatment with UV light and by peroxidation in presence of various fatty acids in feed.

Vit D₃ is fat soluble vitamin and it is mainly absorbed in ilium part of intestine, where the feed remains for long duration. The fat absorption is depended on presence of bile salts for lipid absorption. If there is stress on liver due to mycotoxicosis, fatty liver, IBH where liver function gets stressed, bile production and secretion may not be normal, then the Vit D metabolism in liver may get hampered and so the deficiency symptoms may be seen.



As Huvepharma's product Bio D which is 25-hydroxy vitamin D₃ is directly get absorbed and activated in kidney and it bypasses liver metabolism and conversion. Vit D₃ is also important in broiler breeder nutrition which are high performing birds, needs vitamins for proper skeletal development.

Bio D absorption is good as it is natural fermented product. In eggs Vit D₃ absorbed & get accumulated in egg yolk, which gets utilised by newly hatched chicks in first week. As the lipid digestion mechanism is not well developed in early life in chick, chick can use Vit D₃ from yolk. So, in breeder Bio D is essential not only for own skeletal development but also for early chick nutrition. It is also important for egg quality, hatchability, immunity etc. making it necessary. So proper supplementation of the Vitamin is important for optimizing broiler breeder operations.

Vit D plays important role in regulating Calcium haemostasis which is also required for skeletal development, embryo development, immunity and basic metabolism processes. It becomes a vital nutrient in breeders, layers, broilers and chicks.

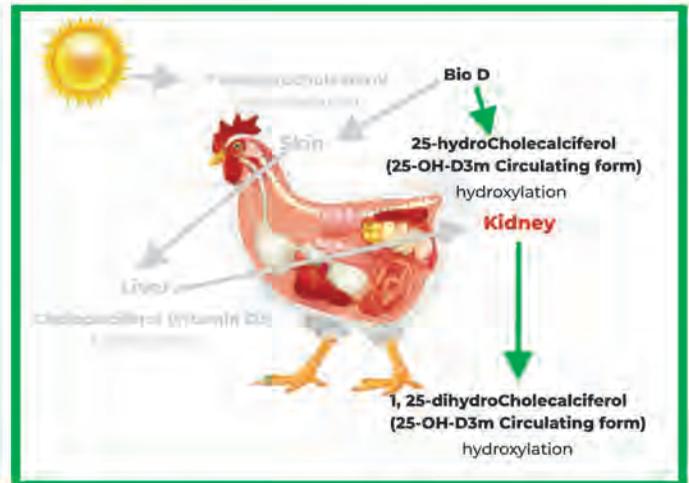
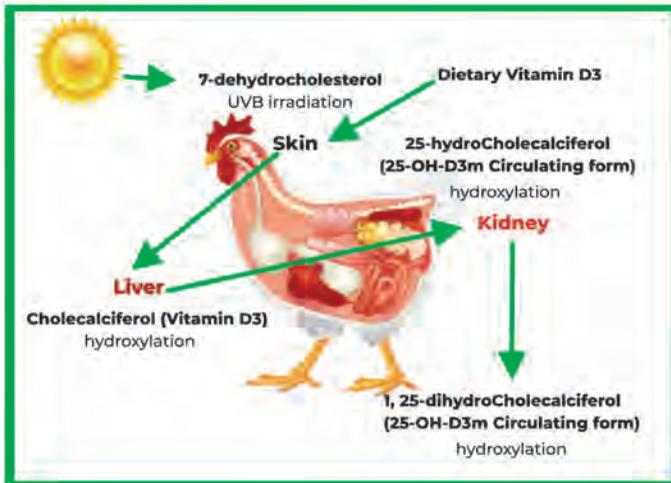
In present commercial broiler operations fast growth rate is obtained in muscle and skeletal development, which calls for fast bone mineralisation without any porosity.

Otherwise, bird may show lesions of lameness, femur head necrosis (osteomyelitis), tibial dyschondroplasia. Bio D[®] helps in Ca and P haemostasis to maintain proper growth of broiler.

Bio D[®] can support immunity system to have better defence mechanism for bacterial and viral diseases in poultry.

In laying hens, if the laying period get extended, where egg quality and egg shell may be a problem in later stages of lay. In this mechanism Vitamin D₃ plays an important role for regulation of intestinal calcium absorption. Bio D[®] acts as metabolite which can bypass liver hydrolysis, so the action of Bio D[®] is not dependable on liver function which may affected due to mycotoxins, fatty liver syndrome, IBH etc.

In conclusion Vitamin D is essential for birds and as standard diet ingredients do not contain enough of this vitamin, it should be supplemented to make sure the animals vitamin D needs are met throughout production as efficiency is key in diet formulation, opting for a highly effective vitamin D metabolite makes sense. This is where Bio D[®] which contains 25-hydroxy vitamin D₃ with unique properties due to its fermentation origin. 



- 25-hydroxyvitamin D₃ undergoes conversion in the kidney hence follow negative feedback mechanism and avoiding the toxicity and Ca /P imbalance in the body.
- Bio D[®] is safe for use up to 20x the recommended dose.
- Bio D[®] helps to increase in bone mineralization versus the synthetic derivate.
- Bio D[®] helps to increase in bone mineralization versus the synthetic derivate.

To know more, please contact Huvepharma technical team



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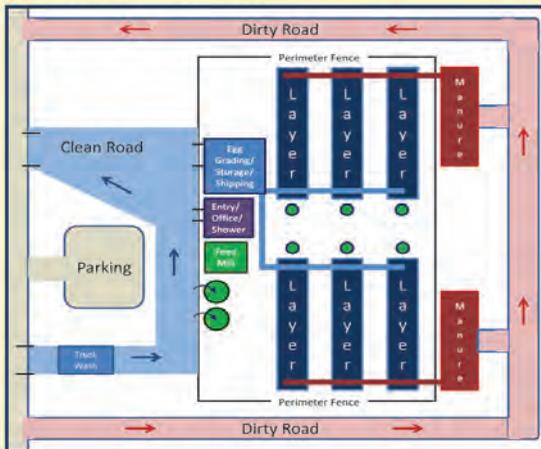
Conceptual Location, Isolation

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



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

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



Cultural

Training, Education and Meetings

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

Train (and periodically retrain) employees on biosecurity procedures.



Structural

Layout, Fences, Gates, Footbaths



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

Limit human and vehicle traffic onto the farm.



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



Vehicle washing station for all vehicles entering the farm.

Use dedicated farm vehicles to deliver feed.



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



Bird exclusion fencing at bottom of the sheds.



poultrybiosecurity.org



hyline.com

SECURITY ON COMMERCIAL LAYER FARMS

Operational

Daily Routine Procedures



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

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

Biosecure entry point. Entry equipped with human spray, hand wash, farm dedicated



footwear and foot bath. Vigilant receiving external crews and their equipment.

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

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



No outside vehicles allowed inside farm gate.

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



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

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



Risk Factors



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



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



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



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



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



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



NATURAL PROTECTION

The gut and its resident bacterial flora play an important role in the development of the immune system and resistance to disease

Under natural brooding conditions chicks obtain their gut flora from their mother & the environment

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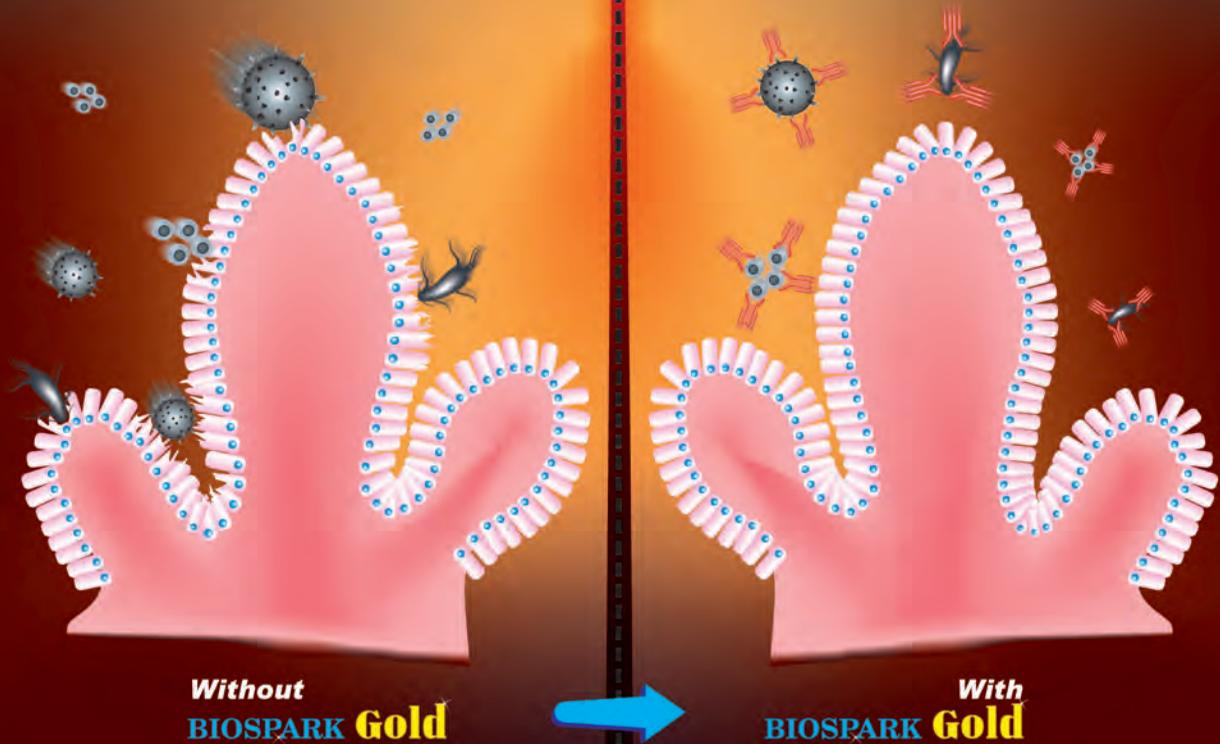


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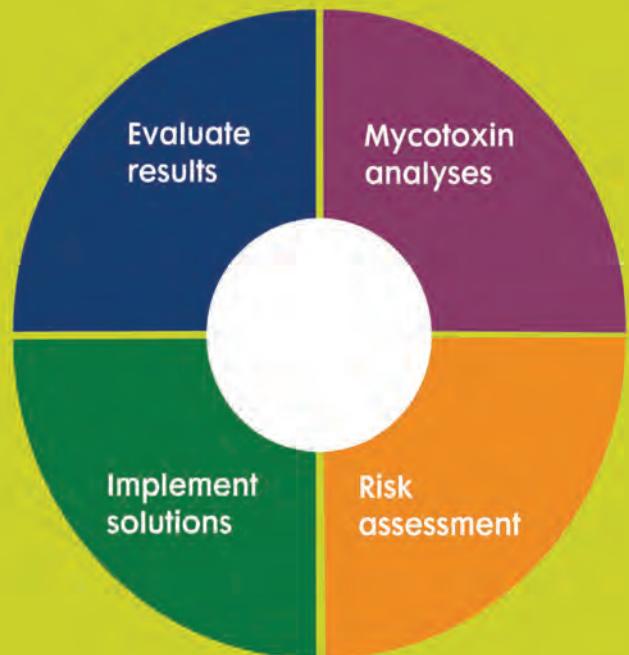
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A Comprehensive Mapping of Mycotoxins Across India in 2021

Avinash Bhat, Dr. Rajesh Pittala & Dr. Sabiha Kadari

Technical Team, Trow Nutrition India



Mycotoxins in raw materials and finished feed are the biggest threat to the animal industry, challenging animal performance and profitability and impacting the feed & food safety. Due to the diversity of their toxic effects and their synergistic properties, mycotoxins pose serious public health concerns even if consumed in low concentrations. An integrated strategy can minimize Mycotoxin associated risks and costs starting with the right and quick assessment of mycotoxin levels in various raw materials and finished feed.

TrouwLab, the customer service laboratory of Trouw Nutrition India located at Hyderabad, carries out analysis of mycotoxins in samples from Pan-India to support our customers in Mycotoxin Risk Assessment. We utilize the analysis and insights to support integrators, feed millers and farmers in managing the



mycotoxin risks in the best possible way. As we present the Mycotoxin Outlook (2021) for India region, we cover overview of the mycotoxin distribution and its concentration in various feeds, raw materials, and species risk assessments. A total of 1203 samples were analysed and taken into consideration for this report. The tables (1 & 2) below, give a summary of mycotoxin concentrations in various feeds and raw materials.

As shown in table 2, the average concentration for aflatoxins was 28.8 ppb, with maximum value at 150 ppb. The average contamination concentrations for fumonisins, ochratoxin, T2HT2 and zearalenone were 1903, 11, 13 and 46 ppb, respectively. In terms of contamination percentage, samples tested for zearalenone showed 100% contamination, followed by ochratoxin, aflatoxin, and fumonisins at 89, 85 and 74% contamination, respectively (depicted in Fig. 1).

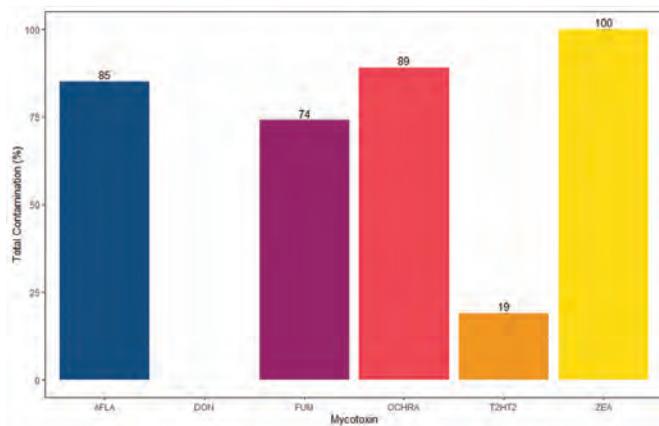
Table 1: Mycotoxin concentrations in total dataset (ppb)

Mycotoxin	# of tests	Average	SD	Median	Minimum	Maximum
AFLA	528	24.7	33.4	10.5	0	150
DON	10	0	0.0	0.0	0	0
FUM	270	1431	1555	900	0	5800
OCHRA	352	10.2	14.6	6	0	113
T2HT2	36	4.4	4.9	2.5	0	14
ZEA	7	46.3	11.6	44	35	65

Table 2: Mycotoxin concentration among contaminated samples (ppb)

Mycotoxin	# of tests	Average	SD	Median	Minimum	Maximum
AFLA	449	28.8	34.7	14.0	3.0	150
FUM	199	1904	1558	1200	250.0	5800
OCHRA	315	11.3	15.1	7.0	2.0	113
T2HT2	7	13.1	0.9	13.0	12.0	14
ZEA	7	46.3	11.6	44.0	35.0	65

Fig. 1: % Mycotoxin contamination among various samples

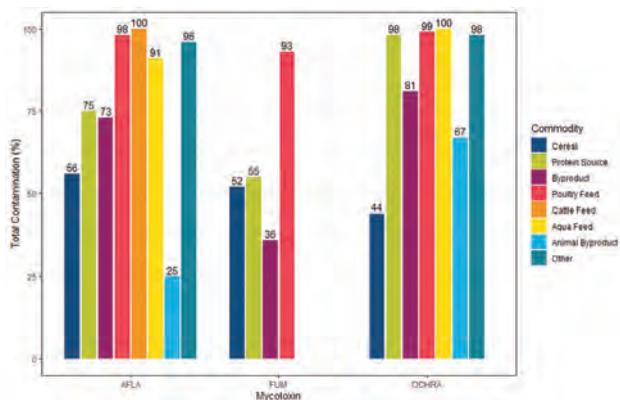


Mycotoxin Incidence in different types of raw materials and feedstuffs in different regions of India

T2HT2 showed the least 19% contamination amongst the various samples tested.

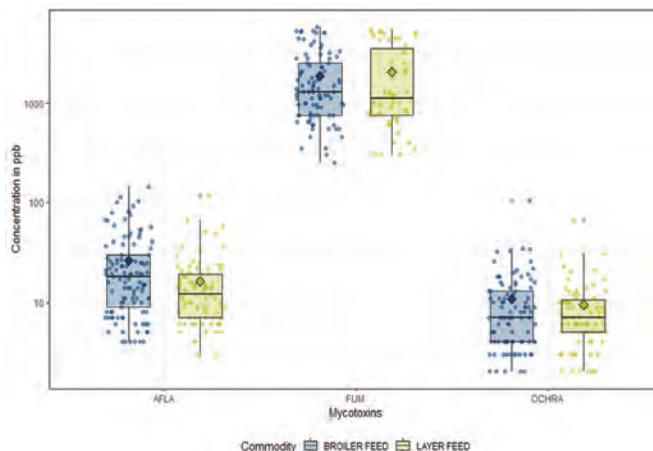
Of the different types of feeds analysed, aflatoxin contamination is more prevalent in the cattle feeds (100%) followed by poultry (98%) and aqua (91%) feeds. Amongst the feed ingredients, both protein source (75%) and cereal by-products (73%) showed highest aflatoxin contamination followed by cereal grains (56%), with the least been in animal by-products (25%). The other category included the ground cake majorly and showed 96% contamination. Fumonisin contamination was highest in Poultry feeds (93%) and the protein sources and cereals showed 50% contaminations each, followed by the by-products (36%). Ochratoxin contamination of more than 95% was observed in aqua feeds (100%), poultry feeds (99), protein source (98%) and others (98%). Cereals showed the least contamination for ochratoxin (44%).

Fig. 2: Mycotoxin contamination percentage in different commodities



Mycotoxin incidence in Poultry feeds

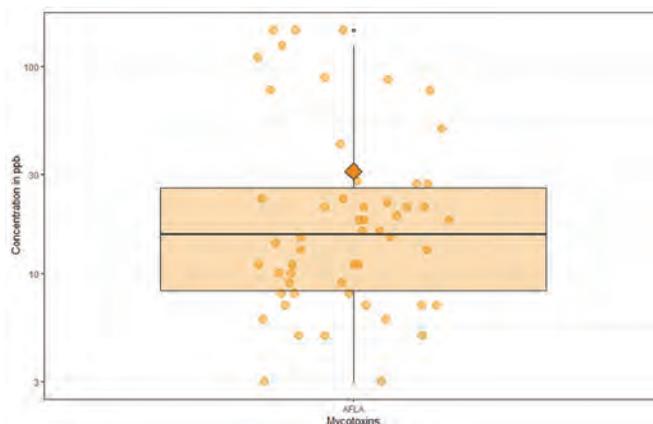
Fig. 3: Mycotoxin distribution in poultry feed



Mycotoxin incidence in Cattle feeds

In Broiler feeds, the maximum levels of aflatoxin reached to 144 ppb and to that of 117 ppb in layer feeds. The average value for aflatoxin in broiler and layer feeds were 26 and 16 ppb, respectively, indicating high and medium risk, respectively. The highest ochratoxin levels were at 104 ppb in broiler feeds and at 66 ppb in layer feeds. The median values for both the feeds (12 and 9 ppb) indicated a low risk level for poultry. Fumonisin had almost similar high concentrations in broiler (5800 ppb) and layer (5400 ppb) feeds, with the average values indicating low risk to poultry. Zearalenone and T2HT2 analysis was lower as such for the number of samples analysed and indicated lower contamination levels in the samples tested.

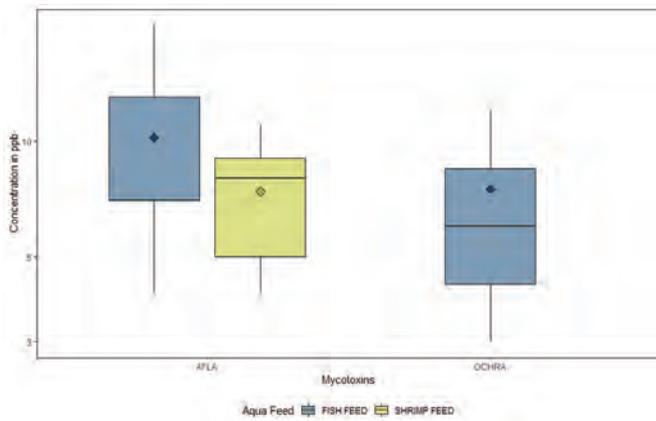
Fig. 4: Mycotoxin distribution in cattle feed



Mycotoxin incidence in Aqua feeds

Of the various samples analysed in ruminant feeds, the highest concentration recorded was 150 ppb of aflatoxin, with the average value of 31 ppb, indicating a very high risk for dairy cattle, and its highest probability of M1 concentrations in milk (as AfM1).

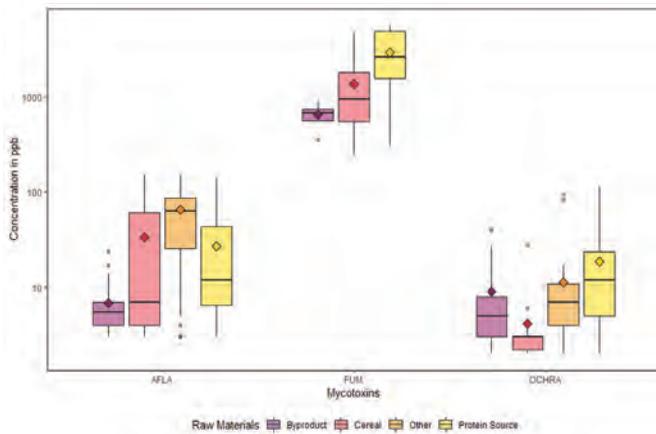
Fig. 5: Mycotoxin distribution in Aqua feed



Mycotoxin Incidence in different Raw materials in India

Although the number of samples tested for mycotoxins was low for aqua feeds, the contamination percentage was quite high and ranged from 100% to 83% for aflatoxin in fish and shrimp feeds, respectively.

Fig. 6: Mycotoxin distribution in different raw materials



Aflatoxins and Fumonisins presence were majorly seen in cereal grains followed by the protein sources, with the minimal occurrence been in cereal by-products. Highest percentile of aflatoxin was also evident in others category, which majorly constituted the groundnut cake. In contrast to the aflatoxin, ochratoxins were majorly seen in protein sources, others and cereal by-products, with the least been in cereals.

The figures below (7, 8 and 9) show detailed distribution of various mycotoxins in cereals, protein sources and cereal by-products.

In cereals, aflatoxins and fumonisins were majorly seen in maize, with average concentrations of 50 and 2500 ppb, respectively. Amongst protein sources,

Fig. 7: Mycotoxin distribution in cereals

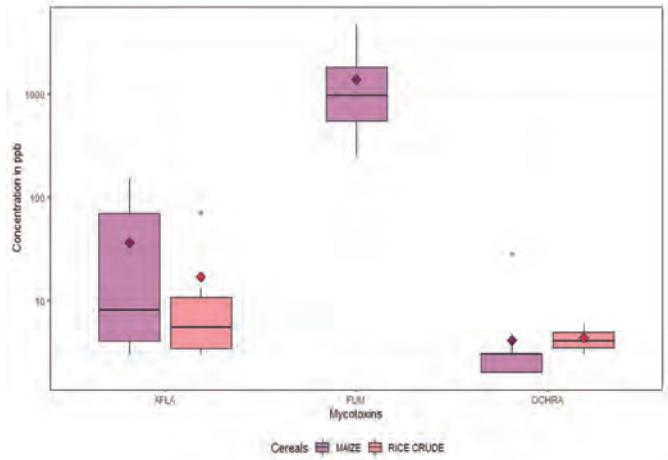


Fig. 8: Mycotoxin distribution in protein sources

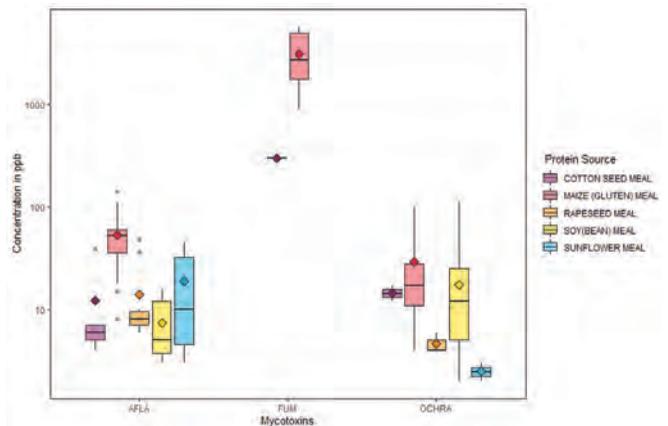
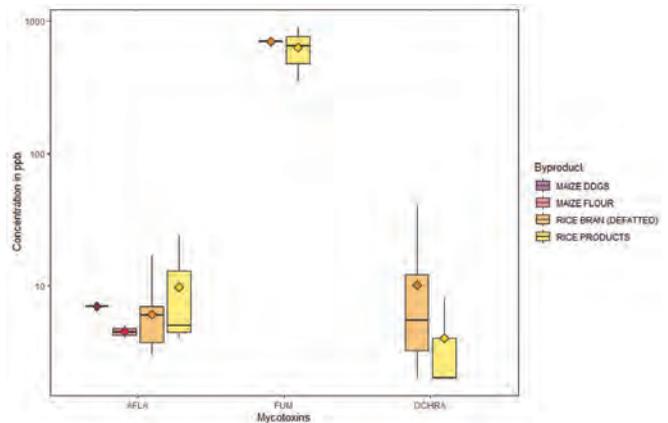


Fig. 9: Mycotoxin distribution in cereal by-products



aflatoxin prevalence was highest in sunflower meal, with the highest concentration been in maize gluten meal. As per the general trend, ochratoxin had its highest occurrence in soybean, with its highest concentrations in soybean meal and maize gluten meal. Under the category of cereal by-products, higher levels of aflatoxins were noticed in rice by products, whereas higher levels of ochratoxins were reported in DORB. Fibrous raw materials and grain by-products contain high levels of mycotoxin as compared to their parent grains as

Table 3: "Color Code" for mycotoxins in various feed types

Feed type	Aflatoxins	Ochratoxins	Fumonisin
Broiler feed	26	11	1860
Layer feed	16	9	2039
Ruminant feed	31	NA**	NA**
Aqua feed	10	8	NA**

*Color code: Red – High risk; Orange: Medium risk; Yellow: Low Risk; Green: Safe zone

**Not analyzed (NA)

mycotoxins tend to concentrate on the outer portion of the grains.

The species risk assessment, as indicated by colour code, reveals that aflatoxin presents itself as a high risk for broilers and ruminants, followed by a risk of medium category to layer and aqua feeds. Ochratoxins and fumonisins are the other two mycotoxins of concern posing a low risk for broilers and layers. Point to be noted here is that these are the risk categorization when mycotoxins are present individually. As the analysis indicate presence of multiple mycotoxins, there would be high probability of mycotoxin challenges in animals, as aflatoxin, ochratoxin and Fumonisin, have been documented to elicit synergistic or additive effects when present in combination.

Conclusions

Mycotoxins present a permanent challenge for the animal industry because they are widely present in almost all the feedstuffs used in feed production and may affect animal production even in very low concentrations. Fluctuations in animal performance are relatively common, especially in poultry and these are frequently inexplicable. Sudden losses in feed conversion, as well as in other performance parameters

could be attributed to mycotoxin contaminated feeds. Aflatoxins effects carry a public health importance in dairy, wherein other than the compromise of animal performance, there is a high risk of carcinogenic implications to human, consequent to carry-over of AfM1 in milk. An integrated holistic approach needs to be adopted to evade mycotoxin challenge in animals. One of the strategies is inclusion of good quality mycotoxin binders regularly in feed at sufficient dosage to combat the effects of mycotoxins in animals, depending on the mycotoxin contamination levels and their types. Majority of the mycotoxins have a negative impact on the immunity and the intestinal integrity. Addition of a broad-spectrum toxin binder, in these scenarios, will aid in protecting the gut integrity and boosting up the immunity of the animal. Rapid, robust, and accurate analysis of different mycotoxins at field level, will provide a quick judgement of the quality of raw material and finished feed and enable the producer to take quick decisions effectively.

Abbreviations used in the analysis

AFLA: Aflatoxins; DON: Deoxynivalanol; FUM: Fumonisin; OCHRA: Ochratoxins; T2HT2: T2 and HT2 Toxin; ZEA: Zearalenone 



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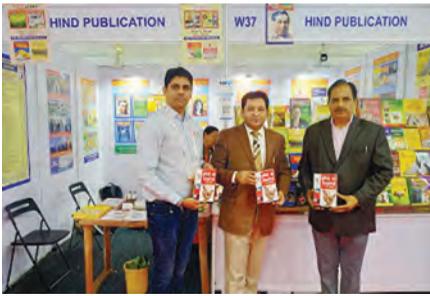
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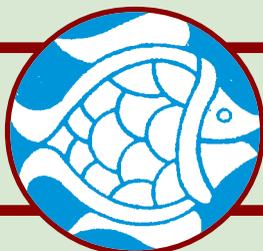
Current Trends Shows that there is no substitute for face-to-face marketing and exhibitions in Poultry and Livestock industry - M.K. Vyas

The Poultry and Livestock exhibitions in-person events all over the world has experienced many changes in the past twenty two months, including adding virtual exhibitions. The pandemic has presented many opportunities to develop new ways to engage. In last 22 months many poultry and livestock exhibitions resulted in cancellation and postponements of most of the events and exhibitions. Now the time has come when organizers will have to be a bit courageous to go for conducting the exhibitions in person. Organizers must remember that Exhibitors and visitors are now looking for in person poultry and livestock exhibitions and events in different part of the world. Organizers of exhibitions will now have to change their mindsets. To measure the success of the exhibitions, organizers must not rely only on the footfall or number of exhibitors. Post pandemic few digital exhibitions conducted by VIV were attended by HIND POULTRY whereas exhibitions in person by SPACE 2022 at Rennes in France and VIV Abu Dhabi in UAE was closely watched. It was observed that while attendances were comparatively less of the pre-pandemic numbers and the number of exhibitors was also less, clients agreed that the quality of attendees was improved. With smaller crowds, the time between demos could be longer, meaning that the sales teams were able to spend more time discussing products and services with individual attendees rather than having to quickly move forward to the next demo. Sales team also felt this these exhibitions helped them to further qualify leads on the show floor rather than later during post-show follow-up. Visitors were also satisfied and did not feel themselves as apart of the crowd in exhibitions. This must be seen as a confidence building

developments for organizers where pre pandemic era the success of any exhibition used to be measured by footfall or the number of exhibitors participated. As we all know the use of exhibitions for exhibitors is as a strategy to meet marketing or brand objectives and their targets are becoming increasingly global. Participating in the exhibition is usually guided by an enterprise's marketing plan and forms part of its strategies for achieving marketing objectives such as increasing brand awareness on the market or launching a new brand. Sometimes an enterprise's management decides to participate in an exhibition not because it was part of the marketing plan but because they feel that it can help them to achieve certain marketing goals which were not originally planned. The whole idea behind participating in exhibitions is to meet customers who can buy your brand at the event or prospective customers who will buy your brand in future. The reputation of exhibition organizers is very important when deciding which exhibition to participate in. The more reputable an organizer is, the higher the chances of a successful exhibition. Generally, exhibitions organised by associations viewed as better than those organised by commercial entities. The organizers who are exclusively working to conduct the poultry or livestock exhibition is also an equally good option. So let us welcome 2022 with renewed energy to be part of poultry and livestock exhibitions as an exhibitor or as a visitors, but let us not forget that supply and demand drive pricing and availability so many material prices have increased and as such when planning the budget for poultry or livestock exhibition, be sure to allow for higher costs. Leisure travel is increasing along with business travel so the demand for hotels and flights are rising. 🏠

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VNU Asia Specific Gearing for Opening of Several Trade Shows as Thailand is Ready to Reopen its Doors to Welcome International Travel

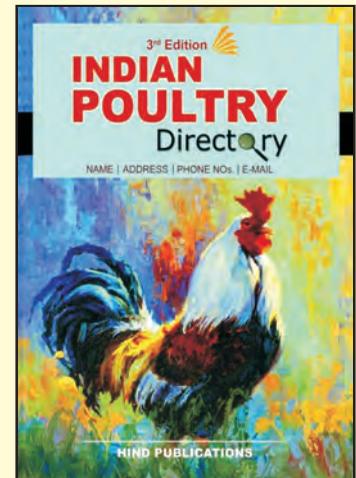
The government in Thailand recorded success in controlling the omicron variant with requisite actions in the last month after facing the next wave of COVID-19 pandemic during the new year holiday period. Thailand's Center for COVID-19 Situation Administration (CCSA) announced following a meeting chaired by Prime Minister General Prayut Chan-o-cha that the government has approved several measures including that the fully vaccinated travelers from any country around the world can apply for a Test & Go Thailand Pass 60 days in advance via <https://tp.consular.go.th/>. There have been slight revisions to the rules, requiring travelers to have proof of their hotel booking on the first and fifth day of their stay in Thailand when they undergo RT-PCR tests. In the original Test & Go program, travelers only had one RT-PCR test on arrival. Tourists are also required to provide certificates of full vaccinations or medical certificates that they have contracted and recovered from COVID-19 when they apply for entry via Thailand Pass.

"This is a significant sign for the exhibition industry that we are waiting for. To bring back the Test & Go entry scheme is a better way to restart the country's economically vital tourism industry after 18 months of the border closure. The short opening of the Test & Go in November 2021 has already proved to have a positive effect on the tourism towards Thailand. So now it is time to end the waiting and restart business through the powerful platforms of Trade Fairs, the ideal gateway to various industries for this region," stated Mr. Igor Palka, Managing Director of VNU Asia Pacific".

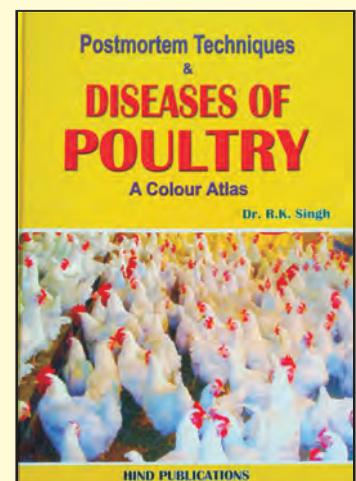
Encouraged with these developments, VNU Asia Pacific, together with DLG Thai, confirms to organize 'AGRITECHNICA ASIA & HORTI ASIA', Asia's largest agricultural machinery and smart horticulture trade exhibition. It will be held from 25-27 May 2022, at BITEC, Bangkok, Thailand. The show will be filled with 300 companies from 29 countries; 60 conferences and seminars will be presented. The registration will be open soon. Following Q3 of 2022, the livestock - aquaculture industry will be highlighted with fifth exhibitions in different countries. 'ILDEX Vietnam' will take place from 3-5 August 2022 at SECC, Ho Chi Minh City, while 'ILDEX Indonesia' and 'Aquatica Asia' will be from 9-11 November 2022 at ICE, Jakarta, Indonesia. The shows will focus on livestock, dairy, meat processing, and aquaculture businesses. Also the 'Health & Nutrition Asia' by VIV will take place from 7-9 September 2022 at IMPACT, Bangkok. The show will focus on the updated sector on the latest animal health, nutrition trends, and services for livestock, poultry, and aquaculture development.

Although the organizer still needs to monitor the COVID-19 situation, it can't stop VNU Asia Pacific from preparing a powerful exhibition platform for all participants with full security measures and are ready to guide the customers globally on applying for the document and pass the entry process to Bangkok, Thailand.

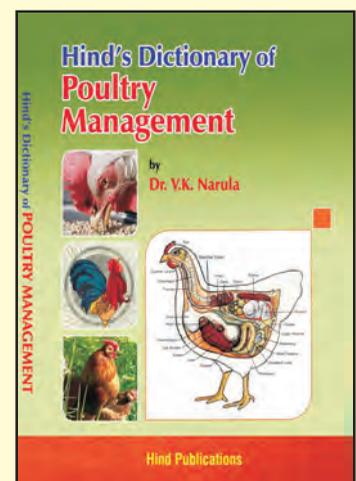
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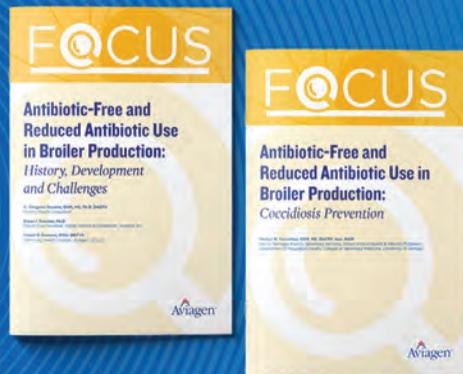
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Aviagen Launches “Focus” Document Series which Delves into Hot Topics Relevant to their Operations

Aviagen® has recently launched a “Focus” document series, presenting customers with a deep dive into hot topics relevant to their operations and the wider poultry industry. Every series highlights a broad theme, breaking it into subtopics, and each document explores this subtopic in detail. Intended for a broad-spectrum audience benefiting from a deeper level of understanding, the literature is written by Aviagen and industry experts. Each publication builds on knowledge presented in the previous, enabling the overall subject series to unfold in a logical progression.

First Focus series: Antibiotic-Free and Reduced Antibiotic Use Broiler Production Aviagen has started the Focus series by zeroing in on a much-discussed theme in the industry today: Antibiotic-free and reduced antibiotic use broiler production, and has released the first two of six documents in the series. Co-written by Aviagen Vice President of Global Technical Operations Dr. Bryan Fancher and accomplished poultry industry veteran Dr. Greg Rosales, the first is entitled, “Antibiotic-Free and Reduced Antibiotic Use in Broiler Production: History, Development and Challenges.” The document begins with providing an historical summary of subject background, and then walks the reader through topical highlights, opportunities and challenges, sharing helpful knowledge currently available on this critical issue. Subsequent releases focus on key management practices that must be considered when any broiler production business takes the decision to rear flocks with zero or reduced levels of antibiotics.



“Antibiotic-Free and Reduced Antibiotic Use in Broiler Production: Coccidiosis Prevention” is the second in the series and is co-authored by Dr. Colin Adams, Veterinary Health Director – Aviagen UK Limited; Dr. Hector Cervantes, Senior Manager, Poultry Veterinary Services, Phibro Animal Health

& Adjunct Professor, Department of Population Health, College of Veterinary Medicine, University of Georgia; and Dr. Akos Klausz, Director of Global Health Monitoring—Aviagen UK Limited . This publication covers how to minimize the risk of an outbreak of coccidiosis – a serious infection of a bird’s intestinal tract – when rearing broilers in an antibiotic-free or reduced-antibiotic production system.

When discussing the launch of the Aviagen Focus series, Dr. Fancher remarked, “Aviagen is excited to provide our customers with this innovative Focus series, as it will help them gain deeper insight into critical areas that impact the health, welfare and performance of their broilers and, ultimately the success of their businesses.” In reference to the first topic of the series, Antibiotic-free and Reduced Antibiotic Use in Broiler Production, Dr. Fancher also commented that, “Raising animals for meat without or with limited use of antibiotics stimulates a lot of conversation due to changing demands in the marketplace, and also because of some misconceptions that are circulating. The documents will become a key part of our expanding global communications portfolio designed to share the latest developments and best practices, and we look forward to exploring other timely and relevant topics in future Focus series.” 



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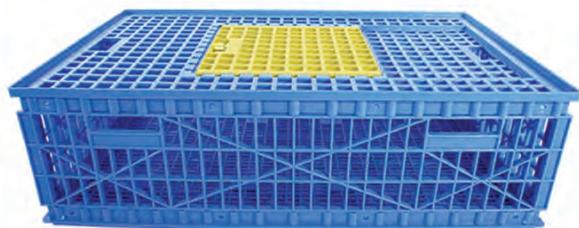
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Dr. Rushikesh A. Kantale

Department of Livestock Products Technology
GADVASU, Punjab



Feeding Management of Layer

1. To avoid fattening of birds as the obesity leads to poor eggproduction.
2. Secondly, the restricted feeding causes 5-10 days delay in sexual maturity and thereby reducing in the number of small eggs laid at the start of production.
3. Restricted feeding is also being done in broiler breeder to check the weight gain of breeder because excess weight of breeder affects the fertility and eggproduction.

Chick feeding

Starter feed are fed to newly hatched chicks until 8 weeks. Starter diets are formulated to give proper nutrition to fast growing baby chicken. Chicks require a ration that can provide the nutrients needed for rapid growth and feather development. Chick rations are relatively high in energy, protein and the vitamins and minerals required for growth and development.

Grower feeding

After 8 weeks of age, the grower feed is used in place of the starter feed upto 20 weeks. After about 14 weeks of age, the grower feed can be replaced with developer feed if it becomes available for pullets, which prepare young chicken for egg production. Feeding management for growers or pullets aims to maintain a growth rate that would lead the pullets in reaching sexual maturity at the desired age and weight and to avoid obesity. Grower ration has lower energy and protein levels than chick rations. Sometimes, a pre-lay ration with increased level of calcium is recommended for feeding 2-3 weeks before the bird begins to lay eggs. Once the chicks are fully feathered their energy requirements are reduced.

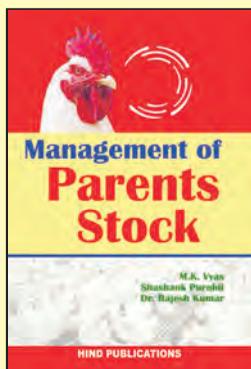
Restricted feeding is sometimes practiced for growers. The restricted feeding means reduction in feed intake or nutrient intake, particularly energy and protein, below the normal feed intake or nutrients requirements, respectively. This is done during the growing periods of layers (14-20 weeks). The reduction is done either by limiting the total amount of feed at 85-90% level of normal intake or diluting the feed with low nutrient dense feed ingredients so that there is reduction in energy and protein content of feed to 85-90% of normal level. The dilution can be done by adding fibrous materials of low nutrient density, such as deoiled rice bran, rice polish, wheat bran, etc.

The reasons for restricted feeding are:

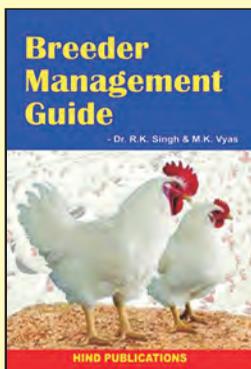
Layer feeding

Layer ration is designed to optimize egg production. This can be in terms of egg numbers, egg size or egg mass. The feed intakes of layer birds are lower as compared to broilers because of lower body size and lower growth rate. Once chicken have started laying eggs, layer feed is used. Layer feeds are formulated for chicken that are laying table eggs. Layer feed (BIS, 2007) contain higher energy and protein than grower feed. Compared to grower feed it also contains extra amount of calcium so the chicken can lay eggs with strong shells. This feed is fed from about 20 weeks of age or when the first egg is laid, whichever occurs first. Feeding programme that use only single feed during the entire laying periods is simple and easy to manage but costly. Therefore BIS (2007) recommends phase feeding programme in two phases: phase-I

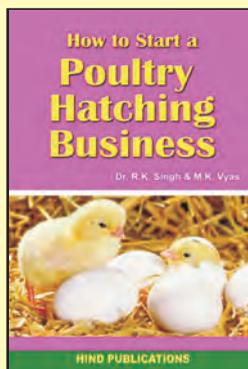
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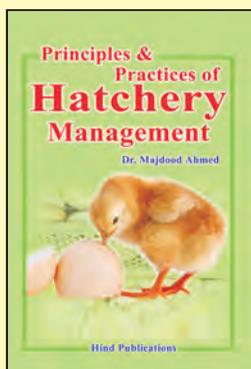
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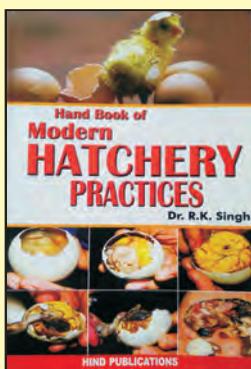
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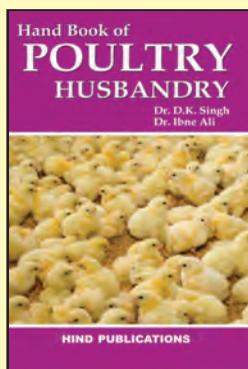
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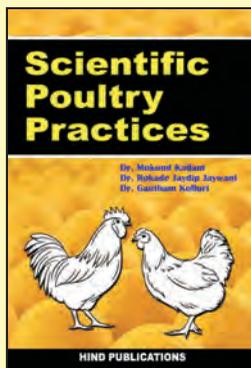
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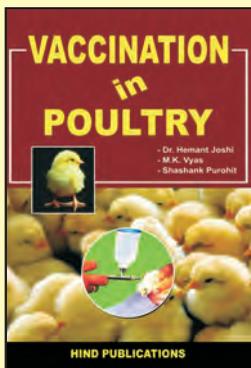
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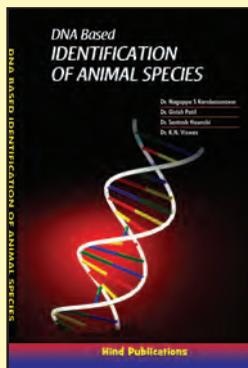
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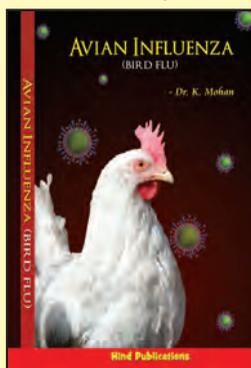
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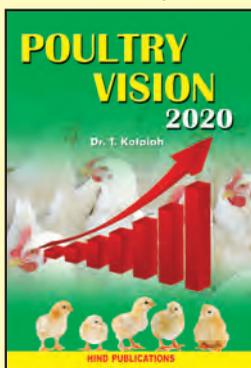
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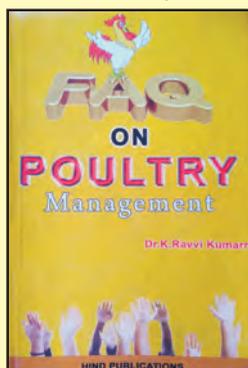
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and phase-II. Phase feeding is the feeding layer birds in different phases to adjust their nutrient intake in accordance with the rate of egg production. Phase-I continues from 21-45 weeks and phase-II from 46-72 weeks. Layer feed for phase-II contains less concentration of nutrients, such as energy, protein and amino acids, compared to that of phase-I, because feed intake increases with the advance of age and increase in body weight. Phase feeding controls the feed intake and body weight of layers and thereby also size of eggs. Thus it minimizes the production cost. The concept of phase feeding was introduced by Dr. G.F. Combs in 1960.

As per BIS (2007) phase feeding of layers is as follows:

1. Phase-I: This phase is most critical period starting from 20 to 45 week of age. In this phase egg production increases from zero to peak (90-96% production). Egg size is increased from 40g to 56g and the body weight of birds is also increased. So in this phase birds require optimum amount of nutrients.

2. Phase-II: From the age of 46 weeks, when bird's egg productivity comes down to around 90%, the protein level is changed (16% CP) according to the level of production to reduce the cost of production.

It is also further suggested that after reduction of egg production to 75%, crude protein level may be reduced to 15%.

Phase feeding refers essentially to reduction in the protein and amino acid levels of the diet as the bird progresses through a laying cycle. The concept of phase feeding

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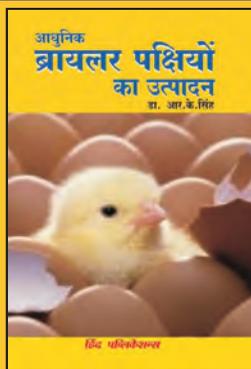


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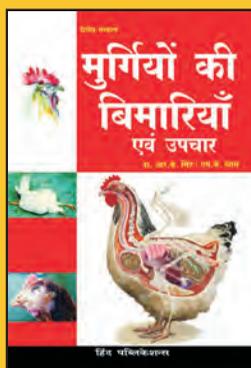
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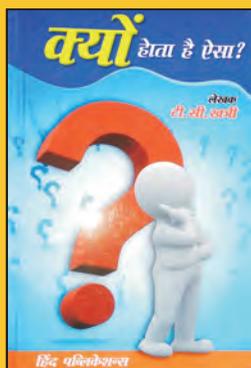
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is based on the fact that as birds get older their feed intake increases, while their egg production decreases. For this reason, it should be economical to reduce the nutrient concentration of the diet. At this time, it is pertinent to consider a conventional egg production curve of a layer, and superimpose both egg weight and daily egg mass output. If nutrient density is to be reduced, this should not occur immediately after peak egg numbers, but rather after peak egg mass has been achieved. There are two reasons for reducing the level of dietary protein and amino acids during the latter stages of egg production, first, to reduce feed costs and secondly, to reduce egg size. The advantages of the first point are readily apparent if protein costs are high, but the advantages of the second point are not so easily defined and will vary depending upon the price of eggs. When a producer is being paid a premium for extra-large and jumbo eggs, there is no advantage to using a phase feeding programme unless egg shell quality is a problem.

It is difficult to give specific recommendations as to the decrease in dietary protein level that can be made to reduce egg size without decreasing the level of production. The appropriate reduction in protein level will depend on the season of the year (effect of temperature on feed consumption), age and production of the bird, and energy level of the diet. Hence, it is necessary that every flock be considered on an individual basis before a decision is made to reduce the level of dietary protein. As a guide, it is recommended that protein intake be reduced from 17g/day to 16g/day after the birds have

dropped to 80% production and to 15g/day after they have dropped to 70% production. With an average feed intake of 100 g/day, this would be equivalent to diets containing 17, 16 and 15% protein. It must be stressed that these values should be used only as a guide after all other factors have been properly considered. If a reduction in the level of protein is made and egg production drops, then the decrease in intake has been too severe and it should be immediately increased. If, on the other hand, production is held constant and egg size is not reduced then the decrease in protein intake has not been severe enough and it can be reduced still further. The amino acid to be considered in this exercise is methionine, since this is the amino acid that has the greatest effect on egg size. Phase feeding of phosphorus has also been recommended as a method of halting the decline in shell quality often seen with older birds. Using this technique, available phosphorus levels may be reduced from approximately 0.4% at peak production to slightly less than 0.3% at the end of lay. Table 10 shows an example of phase feeding of protein, methionine and phosphorus, related to egg production, and independent of feed intake.

A major criticism of phase feeding is that birds do not actually lay "percentages" of an egg. For example, if a flock of birds is producing at 75% production, does this mean that 100% of the flock is laying at 75% or is 75% of the flock laying at 100% production? If the latter is true, then the concept of phase feeding may be harmful. If a bird lays an egg on a specific day, it can be argued that its production is

100% for that day, and so its nutrient requirements are the same regardless of the age of bird. Alternatively, it can be argued that many of the nutrients in an egg, and especially the yolk, accumulate over a number of days, and so this concept of 100% production, regardless of age, is misleading.

Advocates of phase feeding indicate that birds can be successfully managed by reducing protein/amino acid contents of the diet-others suggest that nutrient specifications are too high to start with initially, and that phase feeding merely accomplishes normalization of diet in relation to requirement. The bottom line is that environmental and management conditions vary from flock to flock, and certainly from season to season within a flock. For this reason, the basis of phase feeding must be an accurate assessment of the nutrient intake relative to requirement for production, growth and maintenance.

Molting hen

After 8 to 12 months of egg production, some flocks are molted as a means of extending the period of production. A combination of feed, water, and light restriction is usually used to stop egg production and cause a rest, which may last from 3 to 6 weeks. A rest can also be induced by free-choice feeding of a diet containing a deficiency or excess of a specific nutrient. Examples of nutrients used to induce molt include excess iodine, excess zinc, and sodium chloride deficiency. After the rest, egg production can be initiated by stimulatory lighting. Little research information is available on the nutrient requirements of molted hens;

therefore NRC (1994) has assumed that requirements are similar to those of hens during the first cycle of production.

Calcium for layer

The major mineral required for egg shell quality is calcium. Thin egg shells are observed when calcium, phosphorus, zinc and vitamin D3 are not provided in diets at adequate levels. Layers need 3 - 3.5 gram of calcium per day from first egg throughout the laying period. The recommended strategy is to feed a constant, modest level of calcium in the feed and to use calcium grit (eg. limestone or oyster shell) to provide the additional requirement. After peak production the feed intake is gradually reduced and by increasing the amount of calcium grit, the total amount of calcium per day from feed and grit can be secured. The metabolic requirement for calcium occurs mainly during the night when the egg shell is formed. Feeding the additional grit in the afternoon can provide the bird with calcium during the night when it is needed most. Laying hens should have some portion of calcium available free-choice while calcium is being added to feed.

Moulting is the physiological process of the bird shedding and re-growing feathers to rejuvenate its body to start laying. Moulting occurs naturally in the wild, as seasonal daylight shortens and females stop laying eggs. Laying hens are generally molted once or twice during their productive lives.

When laying birds are kept fasting along with reduced amount of daylight and low amount of water birds lose a portion of their body

weight, which is called forced moulting. Moulting usually does not affect egg size, but allows for an improved egg laying rate, improved shell quality, and increased albumin height. When daylight length is increased hens begin laying eggs again as normal productivity. Forced moulting increases the laying periods of birds and is practiced when the birds' egg production is low and egg price is also low.

Dietary manipulation for improvement of egg quality

Nutritional quality of eggs is also affected by type of feed consumed by birds. Quality of feed can be enhanced by following dietary manipulation.

1. Egg yolk is considered one of the richest sources of cholesterol in human diet. Normal cholesterol content of eggs (about 200-250 mg) and blood (around 150mg %) in chicken has been found to vary quite considerably. The cholesterol content of chicken egg can be reduced up to 25 % through the use of additives, dietary fibre and polyunsaturated fatty acids supplementation.

2. Omega-3 fatty acids have cardio protective and other beneficial effects. Poultry nutritionists have started research to incorporate more of these fatty acids in the egg and have succeeded in developing such an egg called Omega-3 enriched 'designer egg'. This egg can be called as the 'diet egg' or the 'functionalegg'.

3. Diet eggs can have a high percentage of Vitamin E, an antioxidant, which prevents oxidation of cholesterol and therefore its ill effects. These eggs may also contain 600 mg of Omega-

3 fatty acids. Omega-3 fatty acids help to reduce cholesterol triglycerides, clog formation, tumour growth and improved immunity.

4. In order to improve the quality of these eggs further selenium, carotenoid pigments, etc. are also being increased in these eggs.

Feeding of Breeding Stock

A breeder diet should have proper level of energy and protein. Providing adequate vitamins in a breeding ration is very important. Vitamins may account for about 4% of the cost of a breeder feed. Deficiencies of various trace elements and vitamins may lead to reduced hatchability and poor chick quality. The amount of feed required daily depends on the body size, the rate of production and atmospheric temperature. Breeder stocks must be prevented from becoming fatty to maintain their optimum reproductive performances. Both male and female breeders should be placed on a breeder diet five to six weeks before saving hatching eggs.

Male weight and body condition are controlled by adjusting feed quantity so that a slow constant increase in weight (30g/week) is achieved as the male grows older. After 30 weeks of age, male's weekly body weight gain should be approximately 30 grams when averaged over a three week period. Normally an adult cock consumes 130-160 grams feed daily. Both underfeeding and overfeeding of males are possible, and can cause problems. Underfeeding is more common after 40 weeks of age. Cocks may appear dull and listless, having excess feather loss, reduced mating ability and vent colour may become paler and overall there may be reduced fertility. Overfeeding of cocks leads to excessive breast development and excessive weight which can lead to injury of hen while mating, more stress on the cock's joints and foot pads and reduced sex drive.

Feeding of Back Yard Poultry

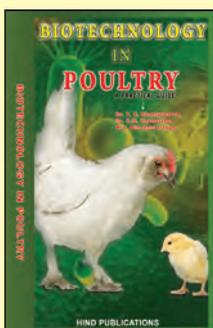
The backyard poultry farming is more beneficial to small, marginal farmers, land less labourers, tribal

and backward class peoples. Backyard poultry farming generates small income for house hold requirement.

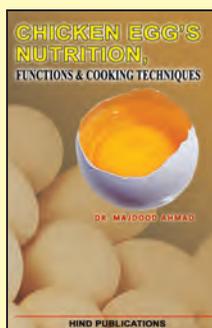
Backyard poultry usually feed on household wastes, farm products and green vegetation, besides free scavenging for waste grains and insects. These birds can perform well with diets high in crude fibre. It has better feed efficiency even with diets containing low energy and protein diets. During the process of scavenging on grass fields these birds have an access to insects, white ants, green grass, grass seeds, waste grains etc., thereby the supplemental feed requirement is much less than those reared under intensive poultry farming.

Feed supplementation in the form of scratch is usually given in the morning and evening to develop habit to reach owner's place for laying eggs and for night shelter. Depending on the availability of free-range area and also the intensity of vegetation growth, the requirement of supplemental feed varies between 25-50 g/bird/day. Backyard birds

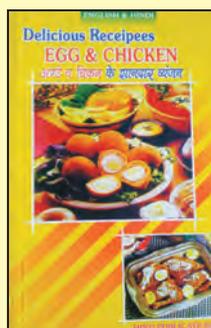
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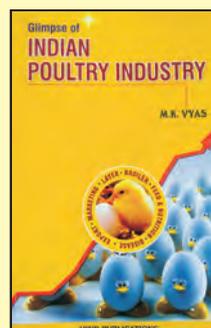
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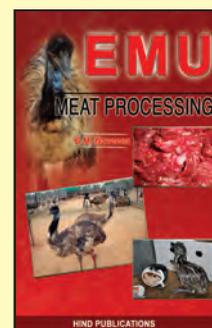
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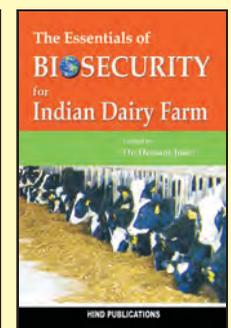
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can also perform well on whole grain feeding under scavenging conditions. For better shell quality, shell grit or limestone needs to be supplemented at the rate of 5-7 g/bird/day during laying period. However, colour of egg yolk or even meat of the birds reared in this system becomes bright yellow or orange as birds can get good amount of carotenoids from scavenging.

Birds that get all their nutrients from scavenging may eat an excess of protein, if insects, worms, larvae etc. are available. Hence supplemental feeding of energy in the form of carbohydrate (cereal grains, etc.) is needed. Fenced or backyard poultry fed with household or garden waste may lack both energy and protein for good growth or egg production. In such cases supplementation with energy sources, protein sources and micronutrients are required.

Disease and Condition in Poultry due to Imbalance in Nutrition

Cannibalism

It occurs in flocks due to deficiency of common salt of sodium and also due to deficiency of crude fibre. If fibre free diet which contain less than 3% crude fibre is fed to chicken cannibalism is more observed. Methionine deficiency also result cannibalism. However, overall deficiency of feed or nutrient(s) for some days can produce cannibalism in chicken.

Fatty liver and kidney syndrome (FLKS)

The deficiency of biotin can lead to this condition in young broilers. This condition is most commonly seen in 2-4-week-old bird fed wheat-based diet because wheat

is deficient in biotin. Pyruvate carboxylase enzyme is biotin dependent and due to its deficiency death is caused by hypoglycemia due to failure of hepatic gluconeogenesis. This affects kidneys because kidneys are vital organs having high energy demand and are affected adversely leading to condition called as FLKS.

Fatty liver haemorrhagic syndrome (FLHS)

This condition is accompanied by excessive accumulation of fat in the liver. The main reason is low protein and high energy ration. Amino acid deficiency or their imbalance is also responsible for this condition. Deficiency of lipotropic factors is responsible. Certain mould toxins have also been reported as a cause of this condition.

The lesions are excessive fat deposition in the liver with haemorrhage. This condition may be prevented by increasing the level (1-2%) of dietary protein supplementation with 50 g of CuSO₄, 500 g of choline, 3 mg of Vitamin B12, 500 I.U of Vitamin E and 500 g of methionine per 100 kg of ration.

Cage layer fatigue and bone breakage in layer

High producing laying hens maintained in cages, sometimes show paralysis at peak egg production. The condition is caused by breakage of the vertebrae which subsequently affects the spinal cord. The reason is an impaired calcium mobilisation due to high output of Ca through the egg shell. This condition is more common in caged birds and the birds reared on deep litter system are rarely affected. It is because of the deficiency of

exercise and the effects which influence the metabolism of Ca. The condition can be cured or prevented by increasing birds' exercise, reducing deposition of fat in the body and improving calcium metabolism by birds.

Salt poisoning

The requirement of salt is very less in poultry as compared to other animals. The excess of salt either in water or in feed is toxic. The symptom of salt poisoning are watery drops, increased water intake, muscular weakness, convulsion and death. On post mortem examination severe congestion and haemorrhages are observed in elementary canal, liver, lungs, kidney and muscles. The level of salt should not exceed 0.5% in ration and 3000 ppm in drinkingwater.

Stress

When reactive oxygen species (ROS) in the body deforms the lipid layers in cell membranes and decreases the function of membranes. It increases the susceptibility to infection in birds. The condition is called oxidative stress.

Commercial broilers are subjected to stress and this stress decreases the lymphocytes number and increase birds' susceptibility to diseases. ROS which are produced in body by normal metabolic process are responsible for distraction of lipid layer in cell membrane thus causes death of the cell. When antioxidants like vitamin E, vitamin C, vitamin A, carotenoids, Se, Cu, Zn and Mn is supplemented the ROS are neutralised by their antioxidant effects that reduce the free radical damage to the cells and help in

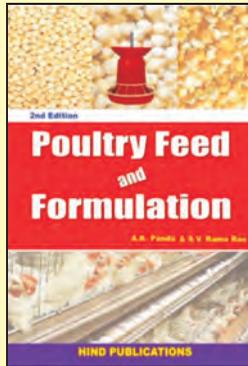
improving immunity, growth and production. It has been reported that the broilers subjected to stress are benefited by inclusion of vitamin E at higher concentration in diet. Vitamin E level of 20-50 mg/kg feed has been found effective. It also helps in preventing the rancidity of fat in the feed. When poultry feed containing oil, fat, rice polish or rice bran which are rich in unsaturated fatty acids are stored for long period the unsaturated fatty acids (UFA) are oxidized by oxidative rancidity. To protect UFA from destruction vitamin E or other antioxidants are necessary to be added in feed. Thus vitamin E may be used up to protect feed from rancidity; so vitamin E content is reduced in feed which is responsible for deficiency of vitamin E in poultry. To prevent such conditions, optimum level of vitamin E should be included in poultryration.

Disease and Condition due to Vitamin Deficiency

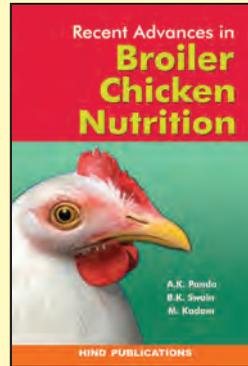
Vitamin deficiencies are most commonly due to inadvertent omission of a vitamin premix from the birds' diet. Multiple signs are therefore seen, although in general, problems with deficiencies of the B vitamins appear first. Because there are some stores of fat-soluble vitamins in the body, it often takes longer for these deficiencies to affect the bird.

Treatment and prevention rely on an adequate dietary supply, usually microencapsulated in gelatin or starch along with an antioxidant. Vitamin destruction in feeds is a factor of time, temperature, and humidity. For most feeds, vitamin efficiency is little affected over 2-month storage within mixed feed. 

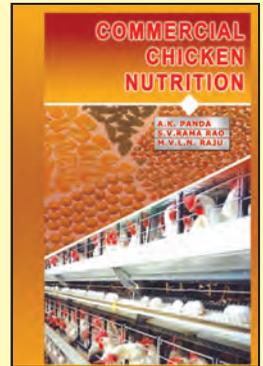
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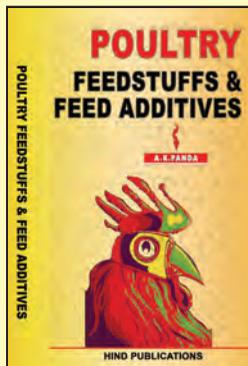
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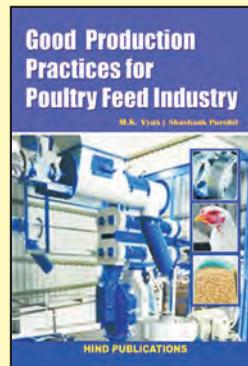
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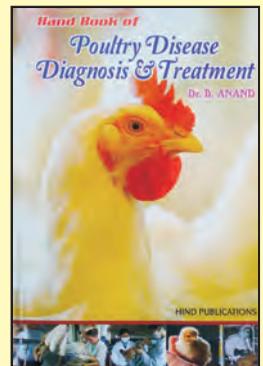
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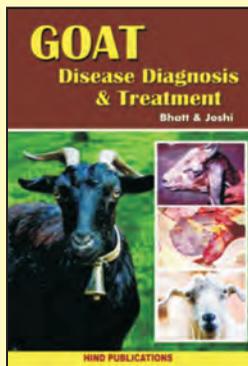
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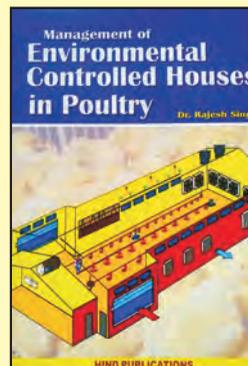
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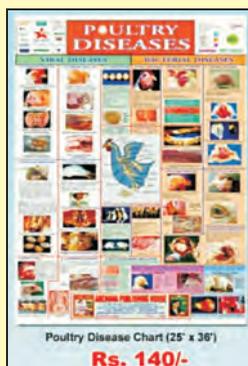
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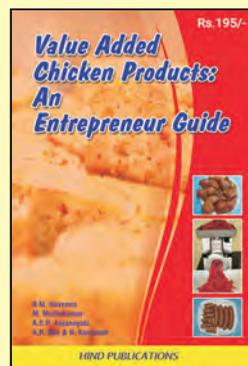
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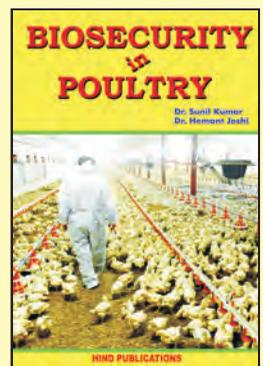
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Rural women in Rajasthan transforming Cottage Poultry Industry through Livelihood Schools

Women from rural areas in Rajasthan (Schools) who are skilled now revolutionizing the face of backyard poultry farming through 'Livelihood Pathshalas (Schools)', according to a



release by the state government. In these pathshalas (Schools), women are being trained and educated and also helping them associating with the business.

Self-help groups are being skilled and facilitated for establishing livelihood pathshalas (Schools) as a local source of support for the women. These Pathshalas (Schools) in addition are facilitating services such as de worming, vaccination, mineral mixture, Azolla making, and primary treatment of the livestock. The trend has only strengthened during the COVID pandemic as a supplementary source of income among women of several remote villages and more than 6000 families across the state have been associated with the process. These Pathshalas (Schools) have especially been successful in empowering rural women from less educated and financially weak families. A better understanding of poultry farming helps to overcome the challenges of infection and other issues.

While the veterinary services are being made available at the local hospitals of the State Animal

Husbandry Department, the Pathshala (Schools) education is helpful in preventing the occurrence of diseases and assuring a healthy stock. The Rajasthan Grameen Aajeevika Vikas Parishad has emerged as a catalyst in the process and associating rural women with poultry and several other cottage industries through self-help groups.

"In rural areas, while there are limited sources of income, the women with the additional responsibility of the household are often unable to travel for work. Various efforts are being made by the state government to help these women discover additional sources of income and cottage poultry farming has emerged as a successful model.

"The cottage farm-bred chickens are preferred by several people in comparison to the major farms; also the eggs of these hens are often able to draw a premium price as 'Desi' egg. The state government is also working towards providing better marketing venues for such women and helps them to become financially independent." 

What is Double Egg Yolk, How it is Formed

Surprised by the name? Don't be, as it's not a scam but a reality! Usually, an egg contains one egg yolk and an egg white. However, the 'Double Egg Yolk' is REAL and is actually formed when the chicken releases two yolks in the same shell. It is said that such eggs that have double egg yolks are produced by young chickens since their reproductive systems have not yet fully matured. Not just that, but when a chicken is nearing the end of its reproducing cycle, it can also lay eggs with a double yolk. The good news is that double yolk eggs are safe to consume. If you ever spot an egg with twin yolks floating in it, never throw them away. However, they have a different white-yolk ratio than the egg with just one yolk! Also, a double-yolk egg means, double the protein, cholesterol and other such nutrients than a regular egg. So, make sure that you keep this in mind the next time you spot a double-yolk egg. If you think finding a double-egg yolk is lucky, then how about an egg with more than 2 yolks? Well, people have discovered more than 2 yolks in an egg and there have been triple and quadruple-yolked eggs too. According to the Guinness World Record, in July 1971, a woman of a Poultry Farms in New York, USA reported an egg that contained nine yolks. Mostly it is observed that double yolk eggs are not sold the simple reason for this is that the consumers are getting more health-conscious and apart from protein, a double-yolk egg contains cholesterol as well. Thus, the farms actually pick them out package them separately and then sell them. 

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Effective way to enhance Farmer Income through Rural Poultry Farming - A Success Story

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Abstract : Backyard poultry is an important source of supplementary income and nutritional security for poor households across the country. An improved variety for back yard poultry namely *Pratapdhan* birds were distributed to rural families of Scheduled Caste (SC) community to improve their livelihood and entrepreneurship in the year 2019-2020, in Jodhpur district of western Rajasthan. A total of 1200 chicks were distributed to 60 identified SC families free of cost. Each unit comprised of sixteen females and four male birds. The results revealed that the improved poultry strain *Pratapdhan* has an immense production potential in arid region under back yard system. The average expenditure on rearing of birds was calculated ¹ 31,635. The benefit cost ratio was recorded at 2.53:1 which appears to be very much economical and viable for rearing of birds under backyard system. It is a profitable and economic venture for resource poor families in terms of livelihood and entrepreneurship.

Keywords: Backyard farming, Poultry, Economic venture, Entrepreneurship, *Pratapdhan*

Introduction

Back yard poultry, a traditional system of poultry keeping is a part of livestock rearing practiced by rural folk since time immemorial. It is type of organic farming with no harmful residue in egg and meat and advantageous and provides supplementary income in shortest possible time with very minimum capital investment. Poultry rearing is simple in operation and ensures availability of egg and meat even in remote rural areas (Sihag *et al.*, 2021). Backyard poultry widely accepted by the rural people is characterized by small flock size consisting of 5-20 birds predominantly non-descript birds maintained in extensive system (Joshi *et al.*, 2019). Rural poultry farming (RPF) provides high quality protein and supplemental income to the local population. Adapting the RPF in backyards of rural households can ensure the availability of eggs and meat in rural and underdeveloped areas; which will help in alleviating the incidence of protein deficiency in the vulnerable group (Women, Children, expectant mothers etc.). The native chicken varieties adopted in free-range backyard conditions for centuries about 11% of total egg production in our country (Rao *et al.*, 2005). The growing demand for indigenous poultry products and low investment in back yard poultry sector provides opportunity for the rural farmers (Regula *et al.*, 2021).

Therefore, it is necessary to test suitable chicken variety, which can thrive and survive in backyard free-range conditions without demanding expensive inputs like feed, disease management, predator menace, harsh and arid climatic conditions and consumer preference etc. Keeping these facts in view, an attempt was made to evaluate the performance of *pratapdhan* birds in backyard poultry farming in arid eco-system of Jodhpur district of Western Rajasthan.

Materials and methods:

The locale of the study is characterized by scanty and erratic annual precipitation (100-400mm), high evaporation rate (1500-2000mm), high temperature and poor fertility of the soil. In addition to this frequent draught, extreme events triggered by climatic change may pose serious threat to survival of living being in arid region (Patidar *et al.*, 2014). College of Agriculture, Jodhpur has purchased faster weight gain and higher egg producing strain-*Pratapdhan* birds (6-8 weeks old) from MPUAT, Udaipur under ICAR, New-Delhi sponsored SC-SP project for entrepreneurship and to strengthen their livelihood and economic improvement of Schedule cast youth through backyard poultry farming. The strain-*Pratapdhan* birds are demonstrated for replacing the non-descript poor egg producing birds in rural households of Keru village of Jodhpur District. The participants

were trained on all aspects of rural poultry farming before the distribution of 20 birds (Comprising 16 females and 4 males) to each selected respondent. Close monitoring were also follow-up by regular field visits of project staff member for technical backstopping. The performance of birds at household level was assessed by collecting the data on the basis of egg production up to 72 weeks of age were recorded. Egg production 'Data Card' was distributed to all selected respondents for maintaining records of daily egg production. At the age of 28 and 40 weeks, egg's weight were recorded by the Mettlor and Toledo balance (nearest to 0.01 gram accuracy). Further, egg mass was calculated using North's egg mass formula. A partial budgeting analysis measures were used for computation of expenditure and income generated from the demonstrated poultry units.

Results and discussion:

Sh. Deva Ram S/o Suntha Ram is non-metric Scheduled Cast farmer from Keru village of Jodhpur district of Western Rajasthan. He is traditional farmer engaged in agriculture also reared some non-descript poultry birds for domestic consumption and could not succeed due to lack of scientific knowledge on backyard poultry farming. He has participated in residential training programme organized at the college campus. He received one unit of 20 *Pratapdhan* birds comprised of (16

females and 4 males) and begun new journey of semi intensive poultry unit with technical input of SC-SP project, College of Agriculture, Jodhpur. These trainings instilled in his mind to do something that earns his bred and also give a message to the mass particular the youth. He constructed a poultry unit shed with using of locally available bamboo, thatch grass and pearl millet straw as litter material for night shelter. He reported that hens laid 1869 eggs in 72 weeks of age. He reported that even the hens stop egg laying than after some selected fertilized eggs were placed for natural hatching blending with scientific practices. According to him 245 chicks were born, baby chicks were raised up to marketing the same. He reared the birds under backyard system supplemented with locally available some concentrate feed including crushed maize, rice, wheat, marble grit and supplement with *Azolla* (5%) and followed prophylactic measurement to reduce mortality and morbidity among the birds.

The means of body weight and other economic parameters of *pratapdhan* chicks showed better performance over the non-descript birds; in respect of average body weight of male (2452.62 ± 65.43g) and female (2150.45 ± 84.34g) at 21 weeks of age, average age at first egg lying (158.63 ± 1.12 days) in arid climatic condition. The results of present study are in accordance with the findings of Tailor (2017). A partial budgeting analysis measures was used in those items of expenditure and incomes. Therefore, the cost of feeds, medicines and equipment's has been considered. The recurring cost i.e. cost of feeding, prophylactic measurement, miscellaneous expenditure and income from sale of eggs and chickens are presented in Table-1. The total gross and net income earned from sale of eggs and birds for rearing of *pratapdhan* chickens were ¹ 79,920 and ¹ 31635 respectively. The benefit cost ratio (2.53:1) was revealed that poultry farming beneficial and viable under backyard farming system in the western part of Rajasthan. Rajbongshi *et al.* (2020) reported in their study that backyard poultry farming have the potency to improve the economic status of a large majority of tribal rural families in the study area. Because the selected progressive farmer was able to earn an annual net profit of ¹ 1,17,600 from poultry rearing as it is a low input or no input venture in the selected study area. Presently Sh. Deva Ram is a champion farmer in the field of backyard poultry farming in selected study area i.e. Keru. Now, he became a free launcher for advocating the importance of backyard poultry farming in the rural communities of adjoining areas. The meat and egg of *Pratapdhan* bird were highly accepted by the public and his success has motivated to the fellow villagers especially by the rural folk. Pioneering efforts would go a long way in driving their sistren towards sustainable growth.

Conclusion:

Based on the facts, it could be concluded that *Pratapdhan* bird has an immense potential for rural poultry farming in arid climatic conditions. Moreover, it is not only viable to meets the nutritional security but also economic venture for resource poor farm families in terms of

Table 1: Economics performance of *Pratapdhan* birds in arid climatic condition.

Particulars	Cost involved
Cost of chicks (₹)	Free of cost(16+4)
Cost of feeding (₹)	26,500
Cost of medicines and miscellaneous (₹)	5,135
Total cost of rearing (₹)	31,635
No. of eggs produced	1887
No. of eggs consumed at home	410
Eggs sold@₹ 10/- egg	10,320
No. of birds died	27
Female birds culled & sold @ ₹ 200/-	25,600
Male birds sold @ ₹ 400/-	44,000
Total Eggs hatched by hen	445
Gross income (₹)	79,920
Net income	50,785
B:C Ratio	2.53:1

Source: Author's own computation

livelihood and economic security. It is also helped in checking the people migration to urban/semi-urban areas. The Government is making concerted efforts to create an ecosystem to support their hard work so that the farmers get optimum returns on a sustainable basis. It would go a long way encourage farmer across India to follow the recommended backyard poultry faring practices and enhance their income. Thus, paving a way of sustainable livestock production for doubling of farmers' income in arid eco system.

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