

# Poultry Fortune

Estd. 1991

• Production • Nutrition • Management • Marketing

Annual Subscription: Rs 800

Foreign \$100

October 2020

Inside...

**Editorial:** Farm Gate prices for Chicken and Eggs are fair now



IEC Chairman Suresh accomplishes mission to create awareness on goodness of Eggs

World Egg Day Celebrated

KPFBA holds Broiler Marketing Managers - Reward & Recognition Program

CPDO & TI Organises Online Training on "Poultry Entrepreneurship"

Supreme Court asks Government to respond to Plea to Ban ART in Livestock

## Building 'BONDS' Stronger

## Trust Forms The Core Of Our 'BONDS'...

When it comes to setting higher benchmark of performance as compared to other chelated mineral sources; producers across the world spread over 100 countries, trust MINTREX®.

MINTREX® is the only globally available bis-chelate where one molecule of metal is attached to two molecules of HMTBa (2 hydroxy-4-methylthio-butanoic acid) by strong bonds. The unique, stable and neutrally charged structure of MINTREX® minerals lead to higher absorption, bioavailability and production performance as compared to other mineral sources. The uniqueness of MINTREX® minerals has been recognized by various international bodies like EU and AAFCO by classifying them as a distinguished class of minerals.

Zn

80% Methionine Value

Cu

78% Methionine Value

Mn

76% Methionine Value

**TMO and TMO Plus**  
(For 'Trace Mineral Optimization' in Poultry)

**NOVUS**  
SOLUTIONS SERVICE SUSTAINABILITY™



\*TMO and TMO Plus standard premix from Novus® contains MINTREX® minerals as source of Zn, Cu and Mn  
\*Novus® and MINTREX® trademarks of Novus International and are registered in the United States and other countries. 2020 Novus International, Inc. All rights reserved

Online Edition: [www.poultryfortune.com](http://www.poultryfortune.com)

Effects of phytogenic feed additives on bird health

Big problem – Simple solution

Eggs or not: Why is MP debating anganwadi meals again ?



*Srinivasa*



*Hy-Line*

## Delivering Performance and Sustaining Growth!

More profits for the farmers,  
better nutrition for all.

**A ROBUST**  
layer that delivers:

**1**

### **PROLIFIC**

Egg Numbers

**2**

### **PERSISTENCY**

For Long Single-Cycle Production

**3**

### **EXCELLENT**

Egg Shell Strength

**4**

### **EFFICIENCY**

Great feed savings resulting in  
profitability. More Eggs on Less Feed



*Hy-Line*

**W-80**

*Srinivasa Farms*<sup>TM</sup>

### **Srinivasa Farms Private Limited**

(CIN No: U01222TG1983PTC003979)

**Regd. Office:**

Plot No. 82, Kavuri Hills, Phase II,  
Madhapur, Hyderabad - 500081,  
Telangana, India.

Tel: +91 40 23633500 / 501  
E-mail: [contact@srinivasa.co](mailto:contact@srinivasa.co)  
Url: [www.srinivasa.co](http://www.srinivasa.co)

Follow us on    

**AP, North Karnataka & Odisha**

Shailendra Karuturi

☎ 90006 58835

**Telangana, Maharashtra, Gujarat,  
Madhya Pradesh & Chattisgarh**

Dr. Balaji Chate

☎ 91210 20298

**Tamil Nadu & South Karnataka**

Dr. Muthuramakrishnan .M

☎ 75488 50453

**North India**

Dr. Vikas Chaurasia

☎ 81069 72007



## Marek's Disease Vaccine, Live, Bivalent (HVT & SB1), Cell Associated



**Designed to Confer Protection against very  
virulent Marek's Disease in Poultry**

**VENTRI BIOLOGICALS**  
(Vaccine Division of VHPL)

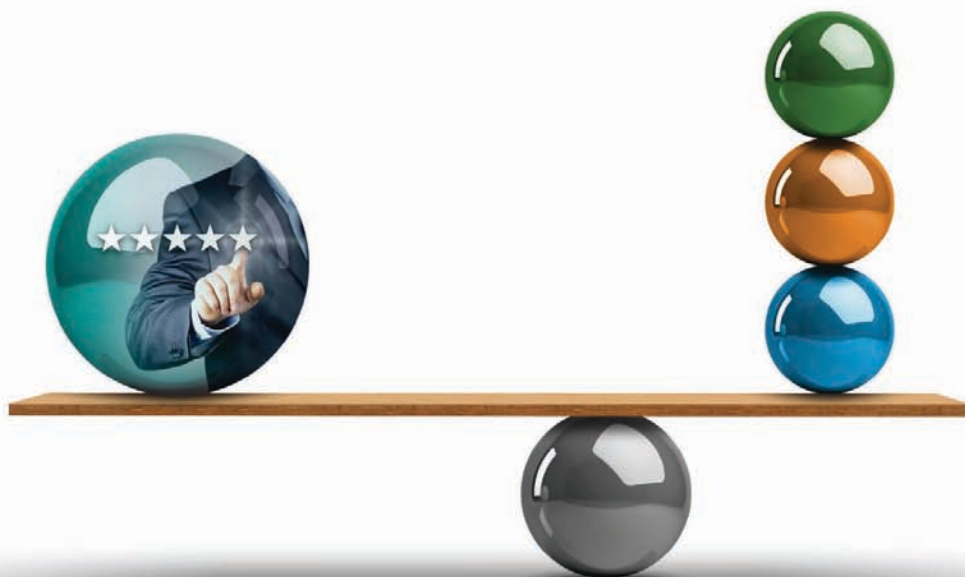
'Venkateshwara House', S. No. 114/A/2, Pune Sinhgad Road, Pune 411030. **Tel.:** +91 (020) 24251803, **Fax:** +91-20-24251060 / 24251077.



Email: [ventri.biologicals@venkys.com](mailto:ventri.biologicals@venkys.com)

[www.venkys.com](http://www.venkys.com)

# Achieve that perfect balance...



# Enzapp™

[www.provimi.in](http://www.provimi.in)

Cargill Premix & Nutrition

Provimi Animal Nutrition India Pvt. Ltd.  
IS-40, KHB Industrial Area,  
Yelahanka New Town, Bengaluru - 560 064,  
Karnataka, India.  
T 080-28460060, E [info@cargill.com](mailto:info@cargill.com)

© 2020 Cargill,  
Incorporated.  
Printed in India

**Cargill**® Helping  
the world  
thrive



Protected Organic Acids by JMT(Joint Matrixcoating Technology)

# PROCID<sup>®</sup>



- ▶ Anti-bacterial property that helps to **improve gut health**
- ▶ Enhance **absorption capacity & digestibility** of nutrients
- ▶ Reduce harmful pathogens for **better performance & immunity**



## MORNINGBIO

For more detailed information, please contact us!  
[www.morningbio.co.kr](http://www.morningbio.co.kr) | [morningbio@morningbio.co.kr](mailto:morningbio@morningbio.co.kr)



# High value Feed enzymes & probiotics

Phytase	Protease	Xylanase	Amylase
Cellulase	Glucanase	Mannanase	Pectinase
Bacillus Subtilis		Bacillus Licheniformis	
Clostridium Butyricum		Enterococcus Faecium	

## BEIJING SMILE FEED SCI. & TECH. CO., LTD

Rm 908, Building 1, Tianzuo International Center, No.12,  
Zhongguancun South Street, Haidian District, Beijing 100081, P.R.China

### Contact with us:

Email: [asia2smile@chinaphytase.com](mailto:asia2smile@chinaphytase.com)

Tel/ WhatsApp: +8615801003874

[www.chinaphytase.com](http://www.chinaphytase.com)



# PREVENTION PROGRAM

**AGAINST**  
**Salmonella**  
**E. Coli**  
**Clostridium**  
**Listeria**



## WETTING SEQUESTERING CHELATING DISPERSING

## FORMUL-A-CID BIOFILM

**ATOMES** has developed a new Unique Technology to clean organic and inorganics deposits in 1 step. Formul-A-Cid is a non-foaming specialty Bioacid, formulated to remove Inorganic deposits such as minerals, salts etc. and organic deposits such as Biofilms from the drinking water lines and networks.

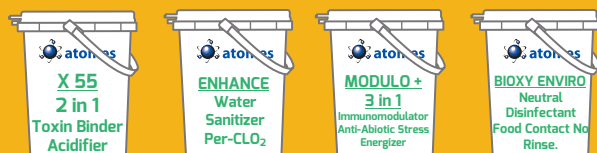
### Features & Benefits.

- 2 in 1 Organic & Inorganic Cleaner
- Low foaming liquid
- Mild odour
- Low viscosity
- Highly concentrated
- Effective at low concentration 1 %
- Cost Effective



Formul-A-Cid is completely Safe to handle, Unique & Patented Biotechnology based, Non-Toxic, Non-Harsh Non-Corrosive, Non-Carcinogenic, Environment Friendly & Biodegradable.

## EXISTING NOVELS



ANTIBIOTIC REPLACEMENT TECHNOLOGY

### NOVO BIOTIC

Novo Biotic Bacillus Strains FD777 were selected on the basis of its survival in the Gastro-Intestinal tract with the ability to withstand High pH, low pH and high concentrations of bile acids. The spores are resistant to physical and environmental factors, such as heat, desiccation and UV radiation enabling them to maintain their viability and desirable characteristics during feed pelleting, storage and handling.

The combination of the 34 + Natural Antibiotics in Novo Biotic will work synergistically to denaturize the DNA, RNA, enzymes and to stop all the activase metabolism inside the pathogenic bacteria to the mitochondria and inner cellular respiration. It acts as preventive and curative.

These antibiotics are thermostable and have antimicrobial activity against a range of potential pathogens of animals including Clostridium perfringens, the causative agent of necrotic enteritis in poultry, Bacillus, Staphylococcus, Enterococcus, Listeria, Salmonella species and Pseudomonas etc...

### DIRECT EFFECT

1. Replaces Antibiotic Growth Promoters
2. Used as Preventive & Curative for Bio solution
3. Reduces Mortality

### INDIRECT EFFECT

4. Replaces Probiotics and Water Sanitizers
5. Reduces FCR
6. Increase Body Weight Gain
7. Increase EPF



### COMPARISON TABLE BETWEEN REGULAR ANTIBIOTICS & NOVO BIOTIC ®

#### REGULAR ANTIBIOTICS

#### NOVO BIOTIC ®

Find anywhere	Patented
Danger: Residues in the Human body	No residues in the human body
Type: Synthetic molecule	Type: 100% Bio/Organic molecule
Technology: Single Molecule	Technology: 34 Bio-Antibiotics (More Efficient) / Gram + and -
Mode Of Action: Single Site	Mode Of Action: Multiple Sites
Resistance: Highly potent resistance	Resistance: Impossible resistance
Action on Biofilm: NIL	Action on Biofilm: Removes Biofilm
Action on Fungi: NIL	Action on Fungi: Highly Fungicidal through Fengycin and Fusaricin
Flora: Will kill it	Flora: Substitute with better flora
Digestion: NIL	Digestion: Production of 15 complex of enzymes

ATOMES INDIA CHEMICALS PVT LTD exclusive distributor in India 4E (A) Srivari Vaibhav 4th Floor, Mettupalayam Road, Kavundampalayam, Coimbatore -641030, Tamil Nadu, +91 4224974995 /+91 95009 89518 info@atomesindia.com | www.atomesindia.com



# A.P. POULTRY EQUIPMENTS

Pioneers in Poultry Incubators

**HI-TECH INCUBATORS & HATCHERS**



Killer Cone / Halal Cutting



De - Feathering Machine:



Chicken Portioning Machine



Feed Plant  
(Feed Mixer & Grinder)



Solar Incubators

**For Further Details Please Contact:**

**M. Prabhakar Reddy**

**Managing Partner**

**Mob: +91 9849212325, +91 9848123203**

**Office:**

Villa No-45, Ramky Villas, Near HMT, Sathavahana Nagar,  
Opp: KPHB, Kukatpally, Hyderabad-72. Telangana. INDIA.

**Factory:**

Plot No.365 & 366, Gokul Plots, Venkata Ramana Colony,  
Near Vasanth Nagar, Kukatpally, Hyderabad-72. A.P. INDIA.

**Email:** appoultry@yahoo.com, appoultry@gmail.com, mprabakarreddy@gmail.com

**Tel/Fax:** +91 40 23151576 | **Website:** www.appoultry.com





## Poultry Fortune

English Monthly Magazine  
(Established in May 1991)  
Volume 22 Number 3 October 2020

**Editor & Publisher**  
M. A. Nazeer

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

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

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

Edited, printed, published and owned by M. A. Nazeer and published from BG-4, Venkataramana Apts., 11-4-634, A.C.Guards, Hyderabad - 500 004, India. Printed at Srinivasa Printers. Registered with Registrar of Newspapers for India with Regn. No. 72452 / 99. Postal Regn.No. RNP/HD/1067/2018-2020. Views and opinions expressed in the technical and non-technical articles/ news are of the authors and not of Poultry Fortune. Hence, we cannot accept any liability for any loss or damage arising from the use of the information / matter contained in this magazine.

- Editor



**NRS PUBLICATIONS**  
www.poultryfortune.com

### Editorial:

11. Farm Gate prices for Chicken and Eggs are fair now.

### News:

12. Awareness of immunity driving chicken prices up.
12. Egg prices head north in city.
14. First generation 'doctors group' veterinarian Dr J. Param Kishan Rao passes away.
16. Good Bye Param !
17. Coronavirus in Kenya: How it turned classrooms into chicken coops.
20. Eggs or not: Why is Madhya Pradesh debating anganwadi meals again ?
22. Poultry industry gets a boost in Telangana.
24. Supreme Court asks Government to Respond to Plea to Ban ART in Livestock.
24. Short supply and high demand push up egg price to Rs 80 per dozen in Mumbai.
26. Emulsifier Academy – Orffa launches a global initiative to support awareness on applications of nutritional emulsifiers in animal feed.
28. CPDO & TI Organises Online Training on "Poultry Entrepreneurship".
30. VIPWA webinar on Entrepreneurship Opportunities in Poultry Sector.
31. Vetphage Pharmaceuticals rebranded with its mother company brand Proteon Pharmaceuticals.

32. Broiler Marketing Managers - Reward & Recognition Program - Karnataka Poultry Farmers & Breeders Association.
35. Innovista - Vetina Enrich Poultry industry on Gut Integrity and Anticoccidial Program Planning.
38. IEC Chairman Suresh accomplishes mission to create awareness on goodness of Eggs - World Egg Day Celebrated.

### Articles:

42. Effects of phytogetic feed additives on bird health.
45. Demand for value added eggs on rise.
46. Health, Hygiene and Routine Maintenance of Poultry in Covid Pandemic-Poultry Meat Perspective.
49. Low pathogenic Avian Influenza (LPAI).
55. Big problem – simple solution.
56. Seven Questions to Inform Antimicrobial Reduction Efforts in Agriculture.
58. Animal welfare and the implications of stress on the immune system and production.
60. Preparation of Bird for Poultry show.
62. Mycotoxin Prevalence in India.
65. Life after 60, Sr. Citizens.
66. Mycotoxins - A force to be Reckoned with !
68. Researchers develop automated water measurement system for poultry.

## ADVERTISERS' INDEX

A.P. Poultry Equipments	8	Provet Pharma Pvt Ltd	25
Abis Exports (India) Pvt Ltd	10	Provimi Animal Nutrition India Pvt Ltd	4
Alura Animal Health & Nutrition	19 & 23	Srinivasa Farms Pvt Ltd	2
Atomes India Chemicals Pvt Ltd	7	Team Agrotech Pvt Ltd	27
Aviagen India Poultry Breeding Co Pvt Ltd	36 & 37	Trouw Nutrition India Pvt Ltd	71
Beijing Smile Feed Sci. & Tech. Co. Ltd	6	Venkateshwara BV Biocorp Pvt Ltd	40
Boehringer Ingelheim India Pvt Ltd	17	Venky's (India) Pvt Ltd	70
Hindusthan Animal Care Pvt Ltd	15	Ventri Biologicals	3
Indovax Pvt Ltd	21	Vibrant Remedies (I) Pvt Ltd	41
Kemin Industries South Asia Pvt Ltd	BC	Zhanjiang Hengrun Machinery Co Ltd	69
Morning Bio	5	Zeus Biotech Pvt Ltd	13
Novus Animal Nutrition (India) Pvt Ltd	FC		

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

The Circulation Department, Poultry Fortune, BG-4, Venkataramana Apartments, 11-4-634, A.C.Guards, Near Income Tax Towers, Hyderabad - 500 004, India. Email: info@poultryfortune.com

# PARIVARTAN **NEXT** GEN

*Building the Future of Poultry with Technology*

"Come and Join the Journey  
Be a Part of the Change and Success"

**200 CRORE**  
**INVESTMENT**  
**BY IB GROUP**

- START-UP BUSINESS OPPORTUNITY FOR YOUNG INDIA
- FIRST EVER SUCH INVESTMENT SCHEME IN INDIA
- GLOBALLY ACCLAIMED NEXT GENERATION POULTRY HOUSING TECHNOLOGY

**25%**  
**INVESTMENT**  
**BY IB GROUP \***

**COME AND VISIT OUR LIVE DEMO SHED**  
**DEMO SHED BIRD WEIGHT CHART**

Age (Days)	Weight (kg)	Feed (kg)	FCR	Mortality %	C.F.C.R	EEF
3	0.080	0.040	0.50	0.22	-	-
7	0.178	0.147	0.83	0.43	-	-
14	0.467	0.494	1.06	0.67	-	-
17	0.723	0.775	1.07	0.78	-	-
21	0.995	1.238	1.24	0.86	1.50	378
24	1.329	1.722	1.30	0.94	1.46	415
28	1.581	2.212	1.40	1.08	1.50	399
30	1.820	2.560	1.41	1.17	1.45	419
31	1.920	2.734	1.42	1.22	1.44	423
32	2.022	2.901	1.43	1.27	-	435

- Best in industry daily weight gain
- Best in industry lowest FCR
- Best in industry livability (lowest mortality) rate



ABIS EXPORTS (INDIA) PVT. LTD., IB Group Corporate House, Indamara, Rajnandgaon (CG) - 491 441.  
Contact : 91 91091 12121 Email : parivartannxtgen@ibgroup.co.in

## Farm Gate prices for Chicken and Eggs are fair now



Dear Readers,  
The October 2020 issue of **Poultry Fortune** is in your hands.

We report with pain that Dr J. Param Kishan Rao, a renowned and farmer-oriented veterinarian in poultry

industry and also known as first generation doctors group in poultry passed away on 17 September 2020 in Hyderabad.

Chicken prices at the farm gate across India have returned to pre-Covid-19 levels of Rs 85 to Rs 90 a kg, as consumption of poultry has risen again as an immunity booster to counter the virus. Following the rumors in February linking poultry with Covid-19 pandemic, chicken prices had crashed to Rs 5 to 10 a kg forcing poultry farmers to release the birds into the open as they could not afford their maintenance.

Doctors' advice to eat eggs daily to boost immunity to fight COVID-19 and shortage of supply as many birds were culled in the past following bird flu scare have shot up egg prices all over the country. Each egg is sold around Rs 6 in the retail market, an increase of Rs 1 to Rs 2 when compared to previous months. There is a difference of Rs 1 per egg between wholesale and retail market. In the wholesale market, the prices are Rs 60 to Rs 65 per dozen. In the retail market, eggs are sold between Rs 6 and Rs 6.25 per egg.

After tomato, potato and onion it is now the turn of the eggs another chicken staple, to give grief to Mumbaikars. Retail rates have risen to Rs 80 a dozen in parts of the city as against last month's rate of Rs 65. Traders blame the egg price rise on a shortfall in production wrought by the disruption during the covid-19 lockdown and the current rise in the demand for the immunity booster.

Karnataka Poultry Farmers & Breeders Association (KPFBA) hosted a Reward and Recognition Program on 23 September 2020 in Bangalore for Broiler Marketing Managers as they participated consistently in daily Online Meetings twice a day for Real Time Broiler Rate Coordination since February 2020 on daily basis, and it helped to stabilize broiler market in Karnataka state. KPFBA started teleconferences in early February 2020, which was done manually – in which one of them starts the call and add four persons, then each of them add four persons – like wise they used to have 15-20 people in the daily teleconferences.

Over 40% of Madhya Pradesh's population is vegetarian. The proposal of providing eggs to the Children has faced stiff opposition from various communities, notably the Jain community. Ahead of bypolls in 27 seats, the BJP government in Madhya Pradesh finds itself

walking a tight rope after Women and Child Welfare Minister Imarti Devi recently reiterated her proposal to provide eggs to children in anganwadis and pregnant women to fight malnourishment. Imarti Devi is one of the 22 Congress MLAs who had followed Jyotiraditya Scindia into the BJP, enabling the party to return to power in March this year.

Central Poultry Development Organisation and Training Institute under Government of India, organized a five day online training programme on "Poultry Entrepreneurship" from 21 to 25 September 2020. The programme was planned to impart the knowledge for entrepreneurs focused on Business models in Indian Poultry, Commercial Poultry Farming and Rural Poultry Farming, Credit proposals for Bank, Government of India Schemes, understanding of profitable poultry models, Nutrition, Disease Management, Medication etc.

In the article section, article titled "Effects of Phytogenic Feed Additives on Bird Health" written by Andreas S. Muller, highlighted that Performance improvement - Increases nutrient digestibility (+ 7 % crude protein, ↑ AA, + 3 % crude fat), Enhances performance (- 2 % FCR, + 1.3 % BWG). Health support - Improves anti-oxidant status (↑ SOD, ↑ GSH-Px). Emission reduction - Reduces noxious gas emission - reduction of NH<sub>3</sub> (up to 50 %). Profit increase – ROI of 3:1 and application of matrix values to reduce costs / ton of feed. 100 % phytogenic - a plant derived (phytogenic) feed additive for poultry using a patented micro-encapsulation technique to protect volatile actives (molecules).

Another article "Big problem – Simple Solution" written by Dr Marleen Boerjan highlighted that "On Marleen Boerjan's arrival, the fact that the hatchery had a serious problem revealed itself by the deafening noise coming from the chick boxes being loaded into a truck. Fortunately, the problem turned out to have a simple operational solution. Good quality day-old-chicks need to be kept comfortable after hatching. Especially after spray vaccination they are prone to chilling, which will cause an increase in first week mortality. Listen and look to your chicks all the time; they will alert you when they are not comfortable!

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

M.A.Nazeer  
Editor & Publisher  
Poultry Fortune



### Poultry Fortune

#### Our Mission

#### Poultry Fortune

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

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

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

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

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

#### TALK TO US

SEND AN EMAIL:

info@poultryfortune.com  
Please do not send attachment.

FOLLOW US:

facebook.com/  
poultryfortune,s  
twitter.com/nrspublications



## Awareness of immunity driving chicken prices up

*Suguna, Venky's say prices are back at pre-Covid-19 levels*

**Mumbai:** Chicken prices at the farm gate across India have returned to pre-Covid-19 levels of Rs 85 to 90 a kg, as consumption of poultry has risen again as an immunity booster to counter the virus, according to major poultry firms.

Following rumors in February linking poultry with Covid-19, chicken prices had crashed to Rs 5 to 10 a kg, forcing poultry farmers to release the birds into the open as they could not afford their maintenance.

"March and April were the (worst)," said S. Vignesh, ED, Suguna Foods, a large poultry player in the south with a market share of over 16%. "Production was severely impacted as maize producers could not supply feed due to the lockdown and demand was (affected) following rumors", he added. "So,

prices had crashed to Rs 5 to 10 a kg from Rs 85 to 90 in December", he said.

"Farm gate prices have bounced back to pre Covid-19 levels and demand has returned to 70 % of the pre-pandemic time. "Chicken is now consumed at least twice a week because people have started taking it as source of protein and an immunity builder".

Confirming the trend, Prasanna Pedgaonkar, Deputy General Manager, Venky's, a leading player from Western India, said "Prices have returned to Rs 85 to 90 a kg. Production and Consumption have moved up from very low levels due to awareness on immunity. Once the celebrations market and hotels open up, we forecast demand to surpass even pre-Covid levels".

## Egg prices head north in city

*Doctors' advice to eat eggs to boost immunity, supply shortage contribute to price increase*

**Mysore:** Doctors' advice to eat eggs daily to boost immunity to fight COVID-19 and shortage of supply as many birds were culled in the past following bird flu scare have shot up egg prices in Mysuru.

Each egg is sold at Rs.6 to Rs. 6.25 in the retail market, an increase of Rs 1 to Rs 1.50 when compared to previous months. There is a difference of Rs 1 per egg between wholesale and retail market. In the wholesale market, the prices are Rs 130 for 24 eggs and Rs 60 to Rs 65 per dozen. In the retail market, eggs are sold between Rs 6 and Rs 6.25 per egg.

V. Sheshanarayana, sales promotional officer, National Egg Coordination Committee, Mysuru told Star of Mysore that a major portion of egg stocks is diverted to Maharashtra which is reporting the maximum number of COVID-19 positive cases and casualties in the country.

"Following the doctors' advice to eat at least two eggs a day to improve body immunity against the pandemic, the demand is high," Sheshanarayana said. He said thousands of birds were culled recently due to bird flu and this has hit egg production. In Mysuru, the supply is over 27 lakh eggs as against the demand of 32 lakh eggs - a shortfall of 5 lakh eggs. "It will take at least four to five months for the prices to reduce.



The rates might decrease during the Karthika Month in November but it will jump again. In 2017, the egg price had touched Rs 5.53 per egg. After that, the prices have now increased," he added.

Abul Kalam Azad of Star Egg Centre, one of the oldest wholesale traders of the city, opined the price would continue to rise till November to December.

The lockdown too hit the movement of transport vehicles and as such, the regular supply of bird feed from Rajasthan, Madhya Pradesh and Gujarat was affected. Subsequently, the culling of chicken following the outbreak of bird flu also contributed for the severe shortage of eggs.

Now, the feed supply is stabilised even farmers are happy with the current market rates. New birds have come from Namakkal, Hospet and Davanagere and they will start laying eggs in December. Till then, the prices may be same, say traders.

There are over 40 to 45 poultry farms including 25 big farms in Mysuru district. Each bird will lay egg from 18th week till 80th week. In all, each bird lays over 340 to 350 eggs.

**DID YOU KNOW??**  
**Nutrition in an egg yolk?**

Egg yolks are packed with health-promoting vitamins and antioxidants. They contain vitamins A, D, E, and K, and choline, as well as antioxidants lutein and zeaxanthin.

**NATIONAL EGG CO-ORDINATION COMMITTEE**

Sunday ho ya monday  
roz khao ande

WEEK:39 DATE:21.09.2020

© All India Poultry Development and Services Pvt Ltd Hyderabad

Courtesy: NECC





Harnessing  
the power of microbes



- Three State of the Art Manufacturing Facilities
- World class R&D and QC facility
- GMP, ISO 22000, ISO 9001, HACCP & HALAL Certified
- Exporting to more than 20 countries
- Unique & Innovative products like.....
  - ▶ Feed Specific SSF enzymes,
  - ▶ Fermented Organic Trace Minerals (FOTMs),
  - ▶ Spore Forming Probiotics,
  - ▶ Double Strain Yeast Culture,
  - ▶ Scientifically Designed Organic Acid Combinations,
  - ▶ Non AGPs etc.,

DNA



[www.zeusindia.net](http://www.zeusindia.net)

For any enquiries please mail to: [zbl@zeusindia.net](mailto:zbl@zeusindia.net)

## First generation 'doctors group' veterinarian Dr J. Param Kishan Rao passes away



**Dr J. Param Kishan Rao**

**Hyderabad:** Dr J. Param Kishan Rao, a renowned and farmer-oriented veterinarian in poultry industry and also known as first generation doctors group in poultry passed away on 17 September 2020 in Hyderabad.

Born on 1 January 1951, as second child to Mr J. V. Narahar Rao and Mrs Rama Bai. He was married to Ms Shanta. He has three Children and all are married and settled.

His son Mr J. Raghu Kishore is the Director of JRB Breeders Pvt Ltd and Sri Venkatarama Poultry Farm.

### First Generation doctors group in poultry

Known as the veterinarian in "Doctors Group" along with Dr Sardar Khan (1965 batch), Dr M. A. Mukeet (1967), Dr Raghavendra Shivane and Dr J. Param Kishan Rao (1969 batch) were known and they were called with affection as "First Generation four-member Doctors Group" in Indian poultry industry. All the four veterinarians worked together in poultry and in Venkateshwara

Hatcheries (VHPL) Group based at Hyderabad and Pune. All the four were well respected in poultry circles across the country.

Dr Param Kishan Rao studied at Vivek Vardhini High School for Higher Secondary School Certificate in 1961. He obtained Bachelor's Degree in Veterinary Science from Hyderabad Agriculture University with distinction in 1974.

Dr Param worked for Hy-Line for an year after graduation in 1974. He joined Venkateshwara Hatcheries Pvt Ltd (VHPL), Pune in 1975 and worked under the able leadership & guidance of late Padma Sri B. V. Rao as the Technical Incharge for the first Broiler Breeder GP batch imported from COBB, USA.

Deputed to JN Marshall for six months on the advice of B. V. Rao for building their first poultry unit in Nashik, Maharashtra. Relocated to VHPL, Hyderabad in 1976 for Managing Layer Parents

project and subsequently got promoted as Operation Manager for Layer Sales in Hyderabad.

Dr Param started his own Veterinary Consultancy in 1981 after resigning from VHPL. He established a Mineral Mixture Plant in the same year. He started his own Layer farm in 1984 and expanded it to 100,000 birds capacity by 1986.

He continued consultancy



**Dr Param Kishan Rao receiving appreciation memento from B. V. Rao.**

for large layer farms in and around Hyderabad and gained reputation as one of the best consultants in poultry farming.

### First to encourage force molting in layers

Dr Param Kishan was the first to encourage force molting in layer birds in those times. He expanded to Broiler Breeding operations in 1998, which now has the capacity of 120,000 parents along with feed plant of 3500 mt per month providing employment to about 300 persons.

Later in 1996 diversified into construction and real estates. And he established a warehousing company in 2009 with Rs 1.5 Lakhs sqr feet storage capacity with present capacity of Rs 3 lakh sqr feet.

He was honoured with President Scout Award by the then President of India Sri Zakir Hussain in 1967. He represented the University in Kabaddi.



**M.V. Reddy, Medchal District Collector and Dr Lakshma Reddy, Director Animal Husbandry, TS, giving Award to Dr J. Param Kishan Rao.**



## PRODUCT LIST



### MYCOTOXIN BINDERS



**Free-Tox® XP** Mycotoxin binder



### ENDOTOXIN REDUCERS



**EndoBan®** Endotoxin reducer

**EndoBan® FT** Endotoxin + mycotoxin reducer



### ENZYMES



**Nutrased® Xyla HS** Endo-xylanase

**Nutrased® P** Phytase

**Nutrased® BXP** Multi-enzyme complex



### PIGMENTS



**Colonut** Natural yellow pigment



### ACIDIFIERS



**Nutracid Essential** Coated acids/salts with essential oils

**Nutracid Protecto** Coated acids

**Nutracid Focus** Coated acids/salts



### IMMUNOMODULATORS



**Nutracid InteStim** Coated butyrate with nucleotides

**Y-MOS** Autolysed dried yeast cell walls



### WATER-SOLUBLE SUPPLEMENTS



**Nuvisol Hatch** Liquid vitamin B complex with carnitine & proteins



### PHYTOGENIC PRODUCTS



**BroClear®** PhytoGenic drinking water supplement

**PhytoStar®** PhytoGenic feed additive



### FLAVORS



**Savoplus**

For Trade & Technical Enquires Contact

**Dr. Amit Kumar Patra, M.V.Sc**

(Animal Nutrition)

Technical Sales Manager SOUTH ASIA,  
Nutrex NV, Belgium.

☎ +91 987 434 0886

✉ amit.patra@nutrex.eu

🌐 www.nutrex.eu



Imported & Marketed in India by

**Hindusthan Animal care Pvt. Ltd.**

📍 3/421-G, Manickapuram,  
Palladam - 641 664. Tamil Nadu, India.

☎ +91 4255 251 056 / 252559

✉ info@hindusthananimalcare.com

🌐 www.hindusthananimalcare.com

👤 Gopi Sugumar ☎ +91 94433 87941

DISCLAIMER: Not all products are available in all countries, not all claims are applicable for each product, not all claims may be authorized in all countries. Representation during this event is for international marketing purposes only and does not imply availability of all products or authorisation of all claims in the country or region where the event takes place.

## Good Bye Param !

I am not a sentimental normally, but often I am caught in deeply emotional situation which leaves me helpless. This happens particularly when friends die on me. Eating and drinking with me one day and leaving me empty the next day.

My association with Param (Dr J. Param Kishan Rao) was from 1958 - 59. He was staying with his uncle in Pusala Basti and I was in adjacent Ram Mandir, Gowliguda in Hyderabad. We lived a parallel life and often our lives crossed each other. He was a few months older to me. But our relation was that he always treated me like an elder brother. We both studied in Vivek Vardhini High School, but he was an year junior to me



**Dr J. Param Kishan Rao**

academically. He was a good sportsman, but my interests were different.

We both studied Veterinary, again he was junior to me. After a few odd jobs, we both joined Venkateshwara Hatcheries Group in Sinhadag, Pune.

My memorable and wild moments of 1974 - 75, were spent in the company of Dr Param. We both stayed in a single bedroom farm quarter in Sinhadag. Cooked and parented 4 kg culled broiler parent on some Sundays. Visited Pune most of the evenings. Downed neat whisky, ate at Café Good Luck in Deccan, akin to Madina Hotel of Hyderabad, rode back in heavy rains and dark nights on Vespa back to



**Dr Raghavendra Shivane**

Sinhagad. To cap it we went by road to Mumbai on Dr Chandras' Lambretta for two days without his knowledge!

Then we parted ways. I joined Bank and he continued with VHPL, Hyderabad. But as fate would have it, I rejoined VHPL as Zonal Manager in 1980. But our days with VHPL were limited. Param, Sardar Khan, Mukeet and myself quit VHPL together on a winter day and literally hit dirt road for a few months. New and real friends like Krishna Murthy and Bujji Babu joined us and we entered poultry industry together in a different role. Strange are the ways of life, our group started doing business with same VHPL whom we left in a huff, as their sub franchiser.

Like every one of us, we had our share of good and bad days. Mokeet passed away in 2007.

Param was a great bonding glue in the friends circle. Soft, sagacious, loved by all, liked by all. Whenever I used to travel in his Car 2121, atleast a hundred salutes were given on road by his unlimited friends to 2121, whether Param was inside or not ! Such was his vast friends circle. He lived life Kingsize !

I pray him for Sadgati to Param's soul.

Good Bye to you Param !

– Dr R. Shivane

## SUBSCRIPTION ORDER FORM

### Aqua International

India's National English Monthly on Aquaculture

Subscribe to  
Aqua International  
and Update yourself  
on Aquaculture

- ☐ 1 Year (12 issues): Rs 800    ☐ 2 Year (24 issues): Rs 1500  
☐ 3 Year (36 issues): Rs 2100    ☐ 5 Year (60 issues): Rs 3500

Please add GST 5% to the above mentioned rates.  
Payment for subscription should be sent by Cheque/Bank Draft drawn in favour of **NRS Publications**, payable at Hyderabad.

Name of the Company: .....

Mr/Ms: ..... Designation : .....

Address: .....

Place / City : ..... State : ..... Pin Code : .....

Mobile: ..... Tel: .....

E-mail: .....

PAYMENT: Please find enclosed a

Bank Draft/Cheque No ..... Dated .....

for Rs ..... favouring '**NRS PUBLICATIONS**', payable at Hyderabad, India.

Please send the magazine to the above address.

Date:

Signature

Payment may also be sent through wire transfer. Our Bank Account details are:

**A/c Name:** NRS Publications, **Bank Name:** ICICI Bank Limited, **A/c No:** 000805004644, **IFSC Code:** ICIC0000008, **PAN No.** ABMPM6671L, **Swift Code:** ICICINBBNRI.

NATURE OF ACTIVITY (Please mark ✓ in the appropriate box)

- ☐ Hatchery    ☐ Feed Manufacturer    ☐ Pharmaceutical  
Co. / Healthcare / Nutrition    ☐ Equipment Manufacturer  
☐ Processing    ☐ Consultant    ☐ Exporter    ☐ Technical  
Expert    ☐ Insurance Company    ☐ Integrated Farming  
☐ Dealer / Distributor for: Feed / Pharmaceutical / Equip-  
ment / Hatchery    ☐ Others

Mail this Subscription Order Form duly filled in along with payment to:

The Circulation Department,  
**AQUA INTERNATIONAL**, NRS PUBLICATIONS  
BG-4, Venkataramana Apartments,  
11-4-634, A.C.Guards, Near IT Towers,  
Hyderabad - 500 004, India.

Tel: 2330 3989, Mob: 96666 89554

**E-mail:** info@aquainternational.in, forum@aquainternational.in  
**Website:** www.aquainternational.in



**NRS PUBLICATIONS**  
www.aquainternational.in

### FOR OFFICE USE

Inward No. .... Received on ..... DD/Cheque No: .....

Date: ..... Subscription No. : ..... Initial: .....





# Don't play with Marek's disease.

Fighting Marek's disease needs  
more than vaccines, it needs expertise.

SOLUTION  
PROVIDER  
FOR MORE THAN  
**30 YEARS**

**LET'S  
SPEAK  
AVIAN**

PEOPLE PRODUCTS SERVICES

Boehringer Ingelheim India Pvt. Ltd.,  
1102, Hallmark Business Plaza, Bandra (E), Mumbai - 400 051.

 **Boehringer  
Ingelheim**



## Coronavirus in Kenya: How it turned classrooms into chicken coops

Kenya's decision to close all schools until next January because of coronavirus has left many of its private schools struggling to survive, as Basilio Mutahi

getting an income from providing an education.

### 'Vital for survival'

Things were especially tough in March, when all the schools were told to close,



Joseph Maina has transformed classrooms in his school

and Mercy Juma report. The classrooms at Mwea Brethren School, which once resonated to the sound of children learning, are now filled with a cacophony of clucking chickens.

On the chalkboard, maths equations have been replaced by a vaccination schedule.

Joseph Maina, who owns the central Kenyan school, has had to turn to nurturing animals to earn some money as he is no longer

as he was still repaying a loan and had to renegotiate with the bank.

At first, it seemed that everything was lost, but "we decided that we must do something [with the school] for survival", Mr Maina tells the BBC.

Desks have been pushed to one side at Mwea Brethren to make way for farm supplies

As private schools, which educate around a fifth of



Desks have been pushed to one side at Mwea Brethren to make way for farm supplies

Kenyan children, rely on fees for their income, their enforced closure has meant that they cannot pay the staff and many are in serious financial trouble.

A small number of schools have managed to continue teaching through online learning, but the fees they are getting barely cover teachers' basic living expenses, according to the Kenya Private Schools Association (KPSA).

About 95% of the more than 300,000 private-school staff members have been sent on unpaid leave, KPSA chief executive Peter Ndoro says. In addition, 133 schools have been forced to close permanently.

### Never this bad

In order to avoid taking this drastic measure, Roka Preparatory, another school in central Kenya, has also converted its premises into a farm.

"Things have never been this bad," James Kung'u, who founded the school 23 years ago, tells the BBC.

Outside, vegetables are now growing in what was the playground.

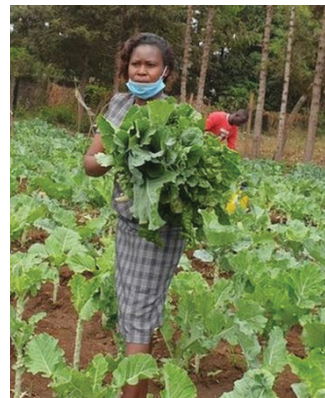
The Playground of Roka preparatory School has been turned into a vegetable farm

### He is also rearing chickens.

"My situation is similar to other schools. I struggle to fuel the car. The teachers and the students are no longer here. Psychologically, we are very much affected," Mr Kung'u says.

Both Mwea Brethren and Roka have retained only two employees, who are helping with the farm work.

"It is not for riches. We are comfortable at least you are not bored, you are busy and



The Playground of Roka preparatory School has been turned into a vegetable farm

it's like therapy," says Mr Kung'u.

### No role for teachers

While the two schools have found an alternative source of income, the owners worry about the fate of their teachers, who have had to go without pay for five months.

This is in contrast to staff at state-run schools, who have been receiving their salaries.

Mr Maina says some teachers in his school have called him to ask if there is anything they can do. "But unfortunately we don't even have enough to feed ourselves," he says.

As a consequence, many have turned to alternative professions.

Macrine Otieno, who taught for six years at a private school in the capital, Nairobi, was evicted from her house after she was unable to pay her rent.

She took a job as a live-in nanny to be able to get shelter and food.

"Since we had our first case of coronavirus in Kenya, and the schools were closed, there has been nothing for me to do. I have been trying to hustle a bit to find something for my child, but it has not been easy," she tells the BBC.

# THE ORIGINAL ALPHA D3

**1980s**  
Research at  
University of Georgia



**1989**  
Patent granted for the  
Alpha D3 metabolite

**2010**  
Alura launches  
Alpha D3 in poultry



**1 $\alpha$  OH-D3**

**2010**  
Alura bring  
Alpha D3 to India



## Revolutionising poultry performance since 1989

Ever since 1989, the miracle metabolite Alpha D3 has been a catalyst in helping the poultry industry attain sustainable higher production performance rates with increased profitability. Alura is the only company to have brought the original and patented vitamin Alpha D3 to market.

### WHAT MAKES ALURA ALPHA D3 UNIQUE?

- Increased bioactivity in comparison to regular Vitamin D3 and other metabolites
- Improve body weight gain and FCR
- Prevents black bone syndrome
- Improves egg shell quality and maximises production of saleable eggs
- Synergetic and Complementary effects with Phytase
- Proven ROI in Broilers & Layers
- Thermostable for palletisation
- Extensively studied product dosage rates for optimum performance.

### USAGE



LAYER



BROILER



BREEDER



### EXTENSIVELY TESTED & VALIDATED

We are the only company to have extensively tested the efficacy of this metabolite through academic papers, clinical trials, and field tests. More than 40 published reviews in scientific journals proves Vitamin Alpha D3 produces more chicken protein, with a better quality at a lower cost.



Imported & distributed by:  
Sapience Agribusiness Consulting LLP  
sales@sapienceagri.com  
+91 97403 99994





## Eggs or not: Why is Madhya Pradesh debating anganwadi meals again ?

*Madhya Pradesh is one of the worst affected states by malnourishment, with the state's tribal population worst affected. The lockdown has disrupted various government schemes for providing nutrition.*



*Over 40% of Madhya Pradesh's population is vegetarian. The proposal has faced stiff opposition from various communities, notably the Jain community.*

**Madhya Pradesh:** Ahead of bypolls in 27 seats, the BJP government in Madhya Pradesh finds itself walking a tightrope after Women and Child Welfare Minister Imarti Devi recently reiterated her proposal to provide eggs to children in anganwadis and pregnant women to fight malnourishment. Imarti Devi is one of the 22 Congress MLAs who had followed Jyotiraditya Scindia into the BJP, enabling the party to return to power in March this year.

### How old is this proposal ?

The proposal to provide eggs to children under the Supplement Nutrition Scheme (SNS) under the Integrated Child Development Scheme (ICDS) was first mooted in 2009. In 2015, it reached

the Cabinet for discussion but was dismissed by the BJP government. That year, Chief Minister Chouhan famously said he would never let it happen while he remained CM.

When the Kamal Nath-led Congress government came to power in 2018, the proposal came up again. The proposal, from Imarti Devi, Women and Child Welfare Minister in the Congress government, got stuck due to financial concerns. The BJP opposed it again, with then leader of opposition Gopal Bhargav saying that if children are fed eggs from childhood, they might grow up to become cannibals. The proposal was planned for implementation from April 2020, but by then the Congress had lost power.

### When did the proposal

### come up again ?

During an interaction with journalists in Gwalior, Imarti Devi was asked if she would raise her earlier proposal after having joined the BJP. She replied that she would indeed stick to her proposal to provide eggs to children and pregnant women, because eggs are high in nutrition. It would not be compulsory but only for those willing to eat eggs. For vegetarians, alternatives would be available in the form of milk and banana. "The health of children is important," she told journalists, and added that she would discuss it with the Chief Minister. However, when contacted, she refused to comment about it.

### How prevalent is malnourishment in Madhya

### Pradesh ?

Madhya Pradesh is one of the worst affected states by malnourishment, with the state's tribal population worst affected. According to the National Family Health Survey (NFH-4), at least 42% of children under age five are stunted while another 43% are underweight. Again, 26% are wasted (thin for their height) while 9% are severely wasted.

The lockdown has disrupted various government schemes for providing nutrition. A survey conducted by the NGO Vikas Samvad in 122 villages of six districts — Rewa, Satna, Panna, Umaria, Niwari and Shivpura — found that the nutrition intake dropped in children (by 51%), pregnant women (67%) and lactating mothers (68%). The majority of the residents in these villages were tribals and SCs.

Veena Shatrughna, retired deputy director of the National Institute of Nutrition, explained that eggs are a complete food that contain all nutrients except vitamin C. "For providing a wholesome meal for children, the right combination of various food including dal, rice, fruits and milk will have to be supplied in the right quantity if they are not given eggs," she said.

### Why is it a difficult decision for MP ?

Over 40% of Madhya Pradesh's population is vegetarian. The proposal has faced stiff opposition from various communities, notably the Jain community. In a post on social media, Jain community leaders have warned that only those parents who wished to have their

**Contd on Page 22**





# You can trust us

## We come with 50 years of poultry experience



Indovax is a citizen of 50-year-old Keggfarms Group which comprises poultry-centric companies engaged in Poultry Breeding, Vaccines, Nutrition and Health. This cumulative experience is embedded in the quality and efficacy of Indovax Vaccines and the pragmatic technical support services that it provides.

**INDOVAX**  
**Poultry Vaccines You Can Depend Upon**



Indovax Pvt. Ltd., Plot # 634, Pace City - II, Sector-37, Gurgaon - 122 001 (Haryana-India)  
Tel: +91+124 - 4924900 Web: [www.indovax.com](http://www.indovax.com)

## Poultry industry gets a boost in Telangana

*Sales pick up with doctors suggesting chicken and eggs to improve immunity*



**Hyderabad:** The poultry industry in the State, which was among the first sectors to be hit by the Covid-19 pandemic much before the lockdown due to rumors, is now on the comeback trail. From where sales and prices had dipped to an all-time low, the sector has now got a boost with many consuming chicken and eggs to improve immunity. The nightmares had begun in early February, when miscreants spread rumors that consumption of chicken could lead to Covid-19. This resulted in egg and chicken sales plunging. The traders cut down the prices by over 70 per cent across the State, but in vain. Chicken and eggs became taboo for many.

To dispel the fear among the people, the poultry sector in association with the administration made efforts by conducting awareness campaigns, but failed to

make desired impact. However, with doctors suggesting chicken and eggs as among the best foods to improve immunity, things have turned upside down. Sales have picked up at chicken centres, especially on Sundays, with many people making beeline to buy chicken and egg.

According to poultry farmers, if the daily consumption of eggs between February and April was 1.25 crore per day, sales have now gone up to 2.5 crore a day. Similarly, sale of broiler birds rise from less than 1 crore to 1.5 crore per month during this period.

“We are able to do over 70 per cent of business compared to last year. Usually, the egg sales from Telangana is 3.50 crore a day while broiler birds per month is 2.50 crore. The industry is steadily returning to normal business and might reach 100 per cent

of business by December,” said KG Anand, General Manager, Venkateshwara Hatcheries.

There are around 10,000 broiler farms and 2,000 layer farms in the State. Apart from within Telangana, eggs are supplied to Maharashtra, Uttar Pradesh, Kolkata and some parts of Tamil Nadu while broiler birds are sold only within the State.

### Prices to remain high

In the wake of shortage

in production, the price of both eggs and chicken are likely to remain high till October and may come down later depending on the supply. Farmers said the price of chicken would be around Rs 220 a kg to Rs 250 a kg while eggs could cost up to Rs 6. The wholesale price at the farm itself is Rs 4.50 per egg, which is costing Rs 5.50 in retail stores. The loss incurred during the lockdown to the poultry industry is estimated to be around Rs 3,000 crore.

*Contn from Page 20 :*

### Eggs or not: Why is Madhya Pradesh debating anganwadi meals again ?

children fed eggs should vote for Imarti Devi, who would be contesting from Dhabra constituency in the upcoming bypolls.

### How has the minister's party reacted ?

Following Imarti Devi's statement, BJP chief spokesperson Deepak Vijayvargiya clarified that it was the minister's personal view and the government would take into consideration the sentiments of all communities before taking any decision.

“We don't want children to be divided along the lines of those who eat eggs and those who do not. We are opposing it as it is dividing children based on their eating habits,” he said. Food habits are a personal choice for people and the government cannot promote this through a scheme where eggs would be distributed in a public space and can be offensive to other communities, he said. “The Jain communities do not even eat onions;

how is it acceptable to serve eggs then?” he said.

Asked about the proposal, Rajya Sabha MP Scindia said the matter is between Imarti Devi, who is the minister, and Shivraj Singh Chouhan who is the head of government. “It is for the government to decide,” he said. Chouhan has not made any statement on the minister's proposal.

### How many states provide eggs to children at anganwadi centres?

At least 14 states, including some ruled by the BJP, have so far been providing eggs as a part of the ICDS.

According to the National Baseline Survey of 2014, in nine of these 14 states — Telangana, Odisha, Andhra Pradesh, West Bengal, Jharkhand, Tamil Nadu, Bihar and Kerala — 95% of the population is non-vegetarian. In the remaining five states — Tripura, Karnataka, Jammu and Kashmir, Assam and Chhattisgarh — over 70% of the population is non-vegetarian.

### BIG PUSH

• Sale of eggs in TS up from 1.25 cr to 2.5 cr daily

• Broiler bird sales up from less than 1 cr to 1.5 cr a month

Poultry sector doing **70%** of business compared with last year

• There are around **10,000** broiler farms and **2,000** layer farms in State

• Eggs are also supplied to Maharashtra, UP, Tamil Nadu and Kolkata

• Price of chicken to be around **Rs 220 a kg to Rs 250 a kg till October**





# A Surgical Strike on Bacteria

**exolution**  
Bacterophage F

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

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

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

## FOR USE IN BROILERS, LAYERS & BREEDERS

### BENEFITS TO THE FLOCK

#### Natural:

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

#### Surgical:

Targets and eliminates specific bacteria, even those resistant to antibiotics

#### Protective:

Maintains gut bio-balance by retaining beneficial bacteria

#### Probiotic:

Enriched with *Bacillus Subtillis*

#### Flexible:

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

#### Stable:

Thermostable and suitable for Pelleting

### BACTERIA IT CONTROLS

#### Salmonella

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

#### E. Coli

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

#### Clostridium Perfringens

Type A, C, B, D, E

#### Staphylococcus Aureus



Imported & distributed by:  
Sapience Agribusiness Consulting LLP  
sales@sapienceagri.com  
+91 97403 99994



## Supreme Court asks Government to Respond to Plea to Ban ART in Livestock

**New Delhi:** The Supreme Court SC on September 18, asked the Union Government to respond to a plea to declare Artificial Reproduction Technique (ART), including Artificial Insemination (AI), performed on livestock and other animals without any proven bio-medical need, as cruel, mala fide, illegal and contrary to the established principles of law.

A Bench comprising of Chief Justice of India S A Bobde (head), Justice AS Bopanna, and Justice V Ramasubramanian issued notice to the government, the Animal Husbandry Department, the Animal Welfare Board of India, and the National Biodiversity Authority.

The plea was filed by Madurai resident Dr. S Venkatesh.

ART performed on livestock/animals are violative of some provisions of the Biological Diversity Act 2002, the Prevention of Cruelty to Animal Act 1960, the Environment (Protection) Act 1986, and also to the Constitution which mandates the protection of the environment and nature along with animals, the plea said.

The plea alleged that Artificial Insemination (AI) harms biodiversity, the value of bulls, and the psychological trauma on the individual animals that are deprived of the natural need and function.

The plea said, "Reproduction is a basic natural and biological need, as well as urge of all living

beings, save and except monosexual organisms. No authority can arbitrarily trample or destroy the rights or needs of any living being including animals by means of policy or practice, which in itself against nature and natural principles".

The petition alleged, "Bypassing and preventing natural mating, and artificially reproducing as a principle/policy is by itself cruel, not to mention the cruelty or pain inflicted by the artificial process and the methods of reproduction in animals".

The petition has also pointed out that in the past five years; the Union Government has incurred a huge expenditure of more than Rs 1200 Crore through the Rashtriya Gokul Mission towards ART as per written reply in the Lok Sabha.

The petitioner stated that, according to the Department of Commerce Export-Import Data, 2019, we have imported bovine semen to the tune of Rs 2094 Lakhs in the last five years.

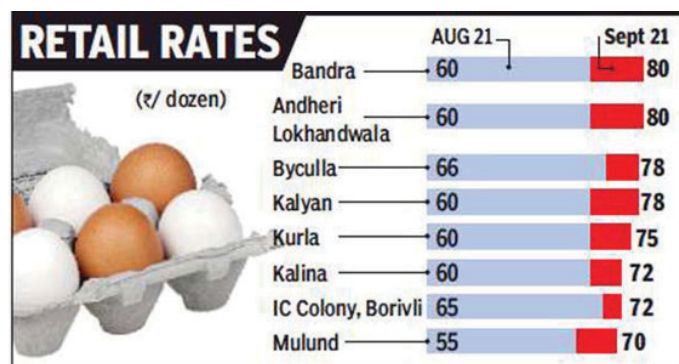
The petitioner also stated that "It is, however, striking to note that no significant expenditure what so ever is made by the government for the natural mating process employed by the majority of the farmers, who had been the reasons for the great strides and success achieved in dairy leading to India being the number one country in the world continuously for more than two decades".

The petition also claimed that indiscriminate and

rampant use of ART is one of the significant contributing the factor for the loss of animal biodiversity in general and cattle biodiversity in particular. It also leads to a huge decrease in

the population of male cattle and other livestock and animals. SC asked Union Government to respond to a plea to declare ART, including Artificial Insemination (AI), performed on livestock.

## Short supply and high demand push up egg price to Rs 80 per dozen in Mumbai



**Mumbai:** After tomato, potato and onion it is now the turn of the eggs another chicken staple, to give grief to Mumbaikars. Retail rates have risen to Rs 80 a dozen in parts of the city as against last month's rate of Rs 65. Traders blame the egg price rise on a shortfall in production wrought by the disruption during the covid-19 lockdown and the current rise in the demand for the immunity booster.

Across the city, consumers are reporting a price increase of Rs 10 to 20 a dozen this past week moreover the nodal National egg coordination committee's published rates have been fluctuating widely daily unlike before when its prices remained stable for months.

Eggs rates had fallen as low as Rs 40 to 48 per dozen in

April and May. It appears that farmers and traders are seeking to recover losses.

Already tomato is Rs 60 kg potato is Rs 40 to 45 and onion Rs 35 how does a household manage expenses? Eggs are the most basic source of protein for most households, "said Jogeshwari President Amreen Shaikh.

Traders blame the rising cost on the supply chain disruption caused by the lockdown. Raju shewale of the Mumbai Egg traders Association said, "at least 35 to 40% of poultry farmers had to close down business the amid lockdown.

Now supply is unable to keep pace with demand. Rates will remain high and perhaps rice further. Mumbai consumes an average of 85 lakh daily, but is now

Contd on Page 26

# Effective Solutions for Mycoplasmosis

**TIATEC™ 10**

Tiamulin Hydrogen Fumarate-10%

**TIATEC™ 80**

Tiamulin Hydrogen Fumarate-80%

**TYLOTEC™ 10**

Tylosin phosphate-10%



*G r a n u l a t e d*



For further information, please contact;  
**Provet Pharma Private Limited**

Plot No.73, First Main Road, Nehru Nagar, OMR, Kottivakkam, CHENNAI – 600041  
Phone : +91 44 2454 5448/50/51, Fax : +91 44 2454 5449, Email : info@provet.in  
www.provet.in

## Emulsifier Academy – Orffa launches a global initiative to support awareness on applications of nutritional emulsifiers in animal feed

### Werkendam, The Netherlands:

As part of its scientific and technical mission to promote the usage of nutritional emulsifiers (a known supplement in animal nutrition), Orffa launches a global initiative called the Emulsifier Academy. The Emulsifier Academy is a platform which has the objective to increase the knowledge on new applications and create more awareness regarding all the ins and outs of nutritional emulsifiers and to increase the consumption of nutritional emulsifiers worldwide in animal nutrition.

Currently the main consumption of nutritional emulsifiers is found in the broiler industry, but even there the additive is still underutilized. Its potential to formulate cheaper diets whilst maintaining performance is still undervalued. Not only improved fat digestion is seen, but also upgrades on dry matter, protein and energy digestibilities have been reported. Next to that its ability to support digestion in antibiotic-free diets is hardly known. In other animal species, nutritional emulsifiers appear to be particularly promising for layers,

turkeys, swine and fish.

The potential for nutritional emulsifiers in animal nutrition is very big, but decent scientific and technical promotion of the opportunities are required.

As a leading player with a strong technical focus, Orffa aims to take the lead in global promotion in an effort to offer solutions to the global animal nutrition industry. Investments in long-term research programs aim to fill in the knowledge gaps. Orffa is simultaneously increasing its global network of scientific partnerships.

Orffa kicked off the development of emulsifier dossier with a PhD research project at the University of Lavras (Brazil). The dossier has been expended with controlled studies in large variety of universities and contract research institutes on all continents. Today a summary of these experiences is bundled in a comprehensive booklet "Emulsifier Academy: Excential Energy Plus – a 3rd generation emulsifier!".

This is the 3rd booklet within Orffa Academy line, following similar initiatives to share knowledge about organic selenium and betaine application in animal nutrition.

Contn from Page 24 :

**Short supply and high demand push up egg price to Rs 80 per dozen in Mumbai**

receiving just 45 lakh.

There is a vast shortfall. On September 21, wholesale rate was Rs 550 per 100 eggs he added Interestingly at the start of a partner many people were afraid to consume poultry items but now Mumbaikars are now consuming more eggs and chicken to build immunity against covid-19.

Shewale said, in fact, hospitals in Pune, Satara and other cities and towns are advising covid patients to consume eggs to help them recover and fortify their immunity.

Aftab Ahmed Khan, Chairman of association

said, during lockdown poultry farmers are unable to rare birds procure feed or sell their products. Farming activity was also disrupted as laborers went home. Even now main supply centres like Hyderabad and surrounding areas in Andhra Pradesh apart from Tamil Nadu, Karnataka and even Maharashtra, are unable to meet the demand. I expect prices to remain high till December.

Poultry products prices speak with increased demand during winter and Christmas. So, there could be a second spell of high prices in December to January.

**World Egg Day @World\_E... · 10h** ✓

Did you know the average person consumes 161 eggs annually?

However some egg-loving countries such as Mexico (378 eggs) and Japan (337 eggs) consume far more than this!

What is your favourite way to consume eggs? [#WorldEggDay](#)





# Team Agrotech

YOUR STEPPING STONES IN SUCCESS!!

TEAM AGROTECH PVT LTD

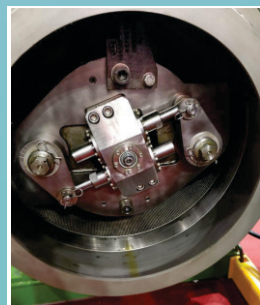


Country Representative of  
CPM ASIA

*Your Single  
Stop Source for*



CPM Pellet Mill



CPM Lineator

## Complete Project management of Turnkey Solutions in the following areas:

- ▶ Integrated Feed plants for Poultry, Floating Fish, Sinking Fish, Shrimps, Cattle etc.
- ▶ Balance of plant equipments for Pre/Post processing
- ▶ Complete Plant Automation Solution, on GATE In to GATE Out concept.
- ▶ Environmental Controlled Sheds for Large Scale Poultry
- ▶ In-house design and manufacturing of Pre Fabricated steel structures for Plants, Warehouses, Grain Storage Silos etc.

**CPM Lineator Technology: Remotely Control the distance between roll and die surface, even when the pellet mill is on. This technology provides swift, accurate and safe roll adjustment, with no downtime, so no production loss.**

**Contact Today:**

**Team Agrotech Pvt Ltd**

1-4, 249, Hill Road, Gandhi Nagar,  
Nagpur, Maharashtra - 440 010, India  
Email - [info@teamagrotech.com](mailto:info@teamagrotech.com); [www.teamagrotech.com](http://www.teamagrotech.com)  
Call Us - +91 - 96505 59095

For Queries  
Contact



Scan me

## CPDO & TI Organises Online Training on “Poultry Entrepreneurship”

**Hessarghatta:** Central Poultry Development Organisation and

Business models in Indian Poultry, Commercial Poultry Farming and Rural Poultry



Training Institute under Government of India, Ministry of Fisheries, Animal Husbandry & Dairying, a premier Institute located at Hessarghatta, Bengaluru organized a 5-day online training programme on “Poultry Entrepreneurship” from 21 to 25 September

Farming, Credit proposals for Bank, Government of India Schemes, understanding of profitable poultry models, Nutrition, Disease Management, Medication etc.

This programme was registered online across

participants were youth of India, Farmers, Graduates and Veterinarians.

The programme started on September 21 and was inaugurated by the Director **Dr P. S. Mahesh**. In the opening session he briefed about the purpose of the programme, background of the Institute and opportunities in poultry sector. Further, in his session, Dr Mahesh narrated growth opportunities in Animal Husbandry Sector in general and poultry sector in particular. He elaborated on various business models in Indian poultry

the nuances of feeder management, water management, brooding etc with minute details for better efficiency in management. The rural poultry development and benefits were also explained in detail.

The second session of the day was by **Dr Nataraj H.B.**, Nutritionist, who briefed about basic concepts of nutrition, principles of feeding, Advances in Feed Milling Technologies and Software adoption. Dr Nataraj drew the attention of the audience regarding salient features in selection of poultry feed ingredients. The role of corn and soya in poultry diet was explained in detail.



namely broilers, layers, breeders, rural poultry and allied ancillary operations supporting the poultry farming.

During the second day, **Prof K. S. Prathap Kumar** illustrated tips on management of poultry especially the rural poultry for the farmers. He explained in detail about

The third day of the programme was lead by **Dr V. Krishnan** and in his session he took a pictorial tour for the audience about basics of poultry farming namely, farm construction, brooding, vaccination, de-worming etc. During his session he showed videos of all management techniques to get the feel of activities



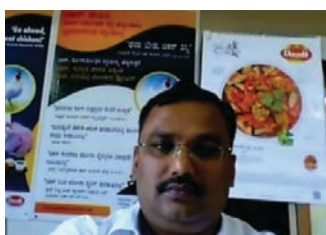
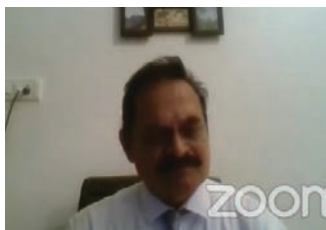
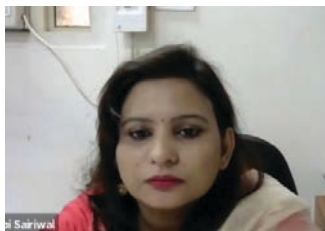
2020.

The programme was planned to impart the knowledge for entrepreneurs focused on

India by 500 participants and highest views on Facebook ([www.facebook.com/cpdoti.bangalore](http://www.facebook.com/cpdoti.bangalore)) upto concluding day being 6,000 participants. The







happening in poultry farm. **Dr Lipi Saiirwal**, Assistant Commissioner, Govt. of India, New Delhi elaborated Govt. of India Schemes for the benefit of audience in the second session. The special emphasis was given for Animal Husbandry Infrastructure fund which was launched by The Prime Minister for the benefit of Animal Husbandry sector. She shared the details of the scheme especially establishment of feed mills, infrastructure for Meat Processing Plants and production of further

processed products. The scheme launched is completely through online, the individual who wants to apply in this scheme is also required to proceed through online through the website: [www.ahidf.udyamimitra.in](http://www.ahidf.udyamimitra.in) or [www.dahd.nic.in](http://www.dahd.nic.in).

On the fourth day, concepts of commercial integration including dynamics of varied performances and profitability for the farmers was explained by **Mr Veeranna**, Senior Officer from Venkateshwara Hatcheries Group. The

second session of the day was dealt in detail by **Dr Baburaj**, DGM, Venky's India. The issues covered in his session were Common Diseases of poultry, their medication, biosecurity planning and implementation, vaccination schedules etc.

On the concluding day, **Dr Jeevan Sonawane**, Managing Director of Novelvet, Mumbai nicely presented significance of Protein from egg and chicken to meet the daily requirements of human protein for various age groups. The audience got clarified about facts and myths with respect to eggs and chicken meat during the session. Dr Jeevan

ingredients for poultry sector. He emphasized to adopt conservation strategies to save for the future. He also mentioned that CPDO & TI has adopted Solar Energy (100 KW), Rainwater Harvesting, Borewell recharging, Waste Management, Incinerator disposal and Tree plantation (boundary) and such of the measures for embracing the nature. A zone of 1.5 km public road is maintained at CPDO & TI as completely trash free and green with Pongamia Trees. The course was concluded with remarks of relationship building with the entrepreneurs and promised institutional support in building up future entrepreneurs in India.

### Production Performance - 2019-20

S.NO	Farms	Hatch	Chicks	Mort	F.C.R	Conv	Avg.	Mean	Day	EEF	Med	Admin	Prod	Earned	Sales	Sales
	Name	Date	Housed	Per	F.C.R	Wt	Age	Gain	Cost/Kg	Cost/Kg	Cost/Kg	Cost/Kg	Cost/Kg	RC/Kg	Kgs	Rate
1	A	27/07/2019	17020	3.77	1.633	1.521	2.450	40.9	59.8	353	0.48	2.12	62.22	8.24	40100	56.84
2	B	14/05/2019	9530	3.29	1.601	1.560	2.160	40.1	53.9	325	0.81	2.39	63.18	7.76	19928	96.89
3	C	10/05/2019	10020	4.72	1.655	1.537	2.470	42.6	58.0	334	0.90	2.12	63.29	7.71	23596	100.70
4	D	20/05/2019	23210	3.56	1.673	1.541	2.530	43.1	58.7	339	0.80	2.05	63.29	7.70	56577	80.25
5	E	26/11/2019	18210	5.60	1.644	1.548	2.380	39.8	59.9	344	0.96	2.22	63.62	7.54	40967	82.21
6	F	01/04/2019	13480	3.66	1.634	1.551	2.330	43.1	54.1	319	1.24	2.22	63.63	7.54	30286	91.25
7	G	11/06/2019	15233	3.34	1.628	1.592	2.140	38.5	55.6	330	0.74	2.40	64.04	7.33	31605	61.52
8	H	26/08/2019	15576	4.19	1.702	1.572	2.520	44.3	56.8	320	0.63	2.06	64.08	7.31	37671	64.47
9	I	12/08/2019	12350	5.86	1.658	1.572	2.340	40.7	57.6	326	0.80	2.26	64.15	7.28	27255	75.60
10	J	01/11/2019	21402	5.04	1.745	1.540	2.820	45.5	62.0	338	0.91	1.86	64.47	7.12	57284	70.74
			2099194	6.14	1.762	1.699	2.250	42.1	53.5	285	1.12	2.36	66.96	5.40	443472	72.60

has created a Youtube Channel: "Protein for life" for the benefit of public to understand scientific facts about egg and chicken. Dr P. S. Mahesh presented the last session in which success stories of commercial and rural poultry were illustrated with examples to motivate the entrepreneurs to find suitable opportunities in poultry sector. He expressed concern about dwindling resources namely water, energy, land, feed

**Mr Anwar Basha**, Senior faculty of CPDO & TI executed the job of admin of conducting online training programme very effectively. The other team members of CPDO & TI worked hard in making this programme successful. The entire programme was live broadcasted on CPDO & TI facebook: [www.facebook.com/cpdoti.bangalore](http://www.facebook.com/cpdoti.bangalore). All the recordings of five days are uploaded on the same day as a ready reference for the facebook visitors.





## VIPWA webinar on Entrepreneurship Opportunities in Poultry Sector

Vets in Private Welfare Association (VIPWA) organized a webinar on 13 September 2020 on Entrepreneurship Opportunities in Poultry Sector and speaker was Prof P. K. Shukla, Registrar and Dean PGS, DUVASU, Mathura. Dr Dinesh Bhosale, President VIPWA welcomed the speaker and participants. Dr Shaveta Sood, Hon' Secretary, VIPWA introduced Dr Shukla Bio.

Prof Dr PK Shukla is renowned personality in Animal Husbandry Sector and has served many institutions during his career. His last assignment was as Joint Commissioner Poultry, Govt. of India in Ministry of Agriculture, Department of AH, Dairying and Fisheries. He is decorated with numerous prestigious awards and honours. He has almost 295 publications in his credit besides 3 book chapters and 2 lab manuals.

Dr Shukla emphasised on the need to develop entrepreneurship skills in young budding veterinarians, profile of Indian Poultry sector and drivers for this industry. He emphasized in understanding the new normal and way ahead. He believes that Entrepreneurship is like treating a business offering as innovative service. Dr Shukla discussed about the malnutrition, which prevails in our country and contributes to 50% of deaths in children below 5 years of age. Food habits has



**Prof P. K. Shukla, Registrar and Dean PGS, DUVASU, Mathura**

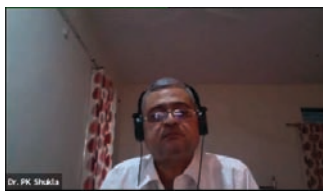
changed across country. It has been observed that population above 15 years of age, almost 70% of it has turned to Non vegetarians.

Total Global meat production is around 107 MMT and only around 10 per cent of this is entering in international marketing channel. India ranks 3rd in egg production and 5th in chicken meat production, having 3.3 % share. Indian Poultry sector targets food security, improving the livelihood and empowering women. Global egg production is around 1387 billion. Poultry contributes nearly 0.5 per cent to the National GDP and 10 per cent to total livestock GDP. Currently Poultry sector values 130,000 crores in which organized sector contributes 80% and unorganized contributes 20%. With 1.37 billion population and 5-6 per cent of per capita increase in annual income makes India, a very large market. India is fourth largest Poultry producer in volumes but per capita consumption is still lowest in World. The total broiler market was estimated at 4.7 million tons. Per capita meat consumption is 3.4 kgs per

annum. Total broiler meat market size was over 85,000 crores in terms of retail price.

Domestic table egg production for 2019 was 109 billion eggs, translating per capita egg consumption of 80 eggs per annum with a market size of 45,000 crores. Total Poultry population in India is 851.81million, out of which 30% is Layer sector, 40% Broiler sector and 30% backyard sector.

Poultry meat exports from India 2017-18 was 0.45MMT,



which values around \$ 87.71MMT and major importing countries are Oman, Maldives, Vietnam, Indonesia, and Russia. India produces 11 million chicks per day and table eggs of 250 million per day. 97% of the total eggs sold in the country are a stable eggs, 2% as branded eggs and less than 1% as processed eggs. In 32 days, the chicken weighs 2 kgs and figure goes to 4 million Broilers in our country. 95% of the chickens goes to wet markets, 4% in processed market, 1% in further processed products. Almost 350 million Layers weighing

around 1.3kgs in 52 weeks produces 320 eggs in a laying cycle.

In broilers, India is growing @8-10% and in Layers it is @4-6% on year to year basis.

Dr Shukla also mentioned about the opportunity in being Entrepreneur in Poultry sector as with 1.37 Billion population and per capita income increase of 5-6% makes India a very big market. Recommendation of 180 eggs and 11 kgs meat can create million jobs, 5-fold increase in Egg industry and 10-fold increase in Broiler industry. Increase in per capita consumption of 1 egg or 50gm poultry meat will generate estimated 25000 additional jobs in the country.



Dr Shukla said that commercial poultry production in India is a major venture of the private sector with about 75 per cent under its control. He informed that rural backyard poultry farming is being strongly encouraged by the public sector as a mean of livelihood support for the rural poor. India is having strength of world class infrastructure, production, self-sufficient genetic stock, highest return on capital and per unit land and the best biological efficiency in animal meat category.

Dr Shukla explained about the nutritional value of egg and poultry meat. He also focused upon new normal COVID scenario in poultry sector. There is need to create awareness among people

**Contd on Page 34**

## Vetphage Pharmaceuticals rebranded with its mother company brand Proteon Pharmaceuticals

*The exercise will bring financial savings which will be translated to enhancing customers' support.*

**September, 2020:** Vetphage Pharmaceuticals, a company operating in the animal health industry, known for their support to Poultry farmers and Aquaculture, has been successfully rebranded to Proteon Pharmaceuticals India Pvt. Ltd. Being established in India in 2017, the Vetphage has proven to be a reliable partner for Proteon Pharmaceuticals S.A, its mother company headquartered in Poland, Europe. Proteon is a leader in bacteriophage (phage) technology for livestock farming. Proteon's products modulate the microbiome, enhancing sustainability and improving performance on the farm. The company currently operates worldwide with footprints in Europe, APAC and Middle East.

Vetphage has shown a promising potential in the first few years of its operations. Having recorded 175% revenue increase in the first 6 months of 2020 despite of the general countrywide lockdown, the company is forecasting more than 200% growth in H2 of 2020 comparing to H1. "Since poultry producers are switching over to safer and efficient feed additives, we expect to see substantial growth in our sales volume and market share. A bulk

of the growth is likely to accrue from the South and West markets, with sizable contributions from the North, Central and Eastern Indian regions. We expect 40% growth in revenue in the Southern region comprising AP, Karnataka, TN, Kerala, Telangana, and a 20% growth in the Western region, comprising of Maharashtra and Gujarat" said Dr Ramdas Kambale, Director of Proteon Pharmaceuticals India. Indian Poultry market is currently valued at Rs. 10,000 crores and growing annually with a compounded growth rate of 10 percent, which is among the highest in world.

"Proteon strives to capture the Indian market under one global brand. It'll bring savings that we will translate to even better support our customers" said Mr Nipun Gupta, Chief Commercial Officer at Proteon Pharmaceuticals S.A. The new approach of poultry integrators is fostering growth in the retail segment, which includes integrator owned or franchised frozen poultry shops, home delivery of frozen poultry products and sales counters in existing establishments. However, this organized sector is expected to only grow post-COVID. India

is also experiencing rapid urbanization, reflecting the drift to an increasingly urban lifestyle, the 10 major cities in the country account for over 60 percent of all poultry meat consumption. There has been a gradual shift in eating habits, with the well-informed younger generation with disposable incomes increasingly adopting non-vegetarian diets. "The market is ready to grow and farmers need to make use of all the technology they can to increase production and minimize losses" added Mr Gupta.

### About Proteon Pharmaceuticals

Professor Jarosław Dastyh is the founder, CEO and President of the Board of Proteon Pharmaceuticals. With a Ph. D in Medical Biology, a full-fledged scientific career and several years of hands on experience in research and technology, he set up the first research laboratory at the International Institute of Molecular and Cell Biology in Warsaw in the year 2000, and in 2005 saw the inspired beginning of Proteon Pharmaceuticals S.A. Professor Jarosław Dastyh is supported by a strong team led by Nipun Gupta, Chief Commercial Officer, responsible for the company's global sales,

sales support, contract management, client services, distribution and marketing, and Dr Ramdas Kambale Director of Sales – APAC Region.

Proteon created a precision phage development platform that uses omics technologies, molecular biology, bioinformatics and artificial intelligence (AI) to create effective, reliable and safe antibacterial solutions for animal health. Proteon was the first company to develop precision bacteriophage-based feed additives to manage bacterial challenges in poultry. The company's flagship anti-salmonella feed additive increases food safety in poultry while its aquaculture product improves fish health by reducing bacterial loads. Proteon's team is developing phage products across the fields of livestock farming, including products that prevent avian pathogenic E.coli in poultry and mastitis in dairy cows.

**Phages** are the most numerous and oldest organisms on the planet. They are organic, natural and omnipresent in the environment. A critical part of the global microbiome, phages naturally protect animals and humans from bacteria. Controlled delivery of phages, using precision biological tools promises to reduce antibiotic usage, overcoming the growing threat of antibiotic resistant bacteria, as well as to increase sustainability in agriculture and to improve human health.

# Broiler Marketing Managers - Reward & Recognition Program

- Karnataka Poultry Farmers & Breeders Association



From left: Inayath Ulla Khan, Executive Secretary, Manjesh Kumar Jadav, Chairman BCC, KPFBA, M. Srihari Reddy, Past President - KPFBA and MD Lotus Farms, Dr M. L Suresh Babu, Member-BCC, KPFBA & MD Sriya Farms & Feeds Pvt Ltd, K.S Ashok Kumar, Past President - KPFBA & MD Maa Integrators, Dr Anjan Goswami, General Secretary, KPFBA and Dr H.R Halambi, Treasurer, KPFBA.

**Karnataka:** Karnataka Poultry Farmers & Breeders Association (KPFBA) hosted a Reward and Recognition Program on 23 September 2020 in Bangalore for Broiler Marketing Managers as they participated consistently in daily Online Meetings twice a day for Real Time Broiler Rate Coordination since February 2020 on daily basis, and helped to stabilize broiler market in Karnataka state.

KPFBA started tele-conferences in early February 2020, which was done manually – in which one of us starts the call and add four persons, then each of them add four persons - like wise we used to have 15-20 people in our daily teleconferences. It was not comfortable task, as every time we added a contact, we have to hold all others, and we have to listen to the COVID caller tune, said Mr Innayath Ullah Khan, Executive Secretary, KPFBA.

Later KPFBA took paid teleconference services which made its job little easy in which all of the involved members can dial simultaneously without holding the calls and also we can see the call log with details of participants at the back end.

Then, we adopted Video Conferences on Zoom platform as many of the participants were not well versed on how to use it, I had to train some of them one on one basis before we come to the main Zoom call. The video calls were made every morning between 10:30 AM and 11:30 AM, in this we used to address the following points:

1. Discuss the on ground / grass root level issues and challenges with regard to broiler sales, marketing and logistics.
2. Market observations – region wise, market wise and companies wise.

3. Arrive at a one single selling rate by all.
4. Gather suggestions / recommendations to decide daily broiler rates.

A report with the outcome of the above points used to be sent to the Broiler Coordination Committee of KPFBA to take informed decisions with regard to Daily Broiler Board Rates.

The tele-conferences were done every evening between 7:30 pm and 8:30 pm. In this we used to discuss that day's market scenarios and the neighbouring market



Inayath Ulla Khan, Executive Secretary, KPFBA

situations, and take confirmations from all the marketing managers to stand at one rate.

The next day – during video conference, we once again ascertain if all stood at the agreed rates. The prime objective of these online meetings are:

1. To ensure reduce the gap between board and selling rates
2. To ensure the farmers get better rate realisations.

## Remarkable Impact attained with Online Meetings

- Dr Anjan Goswami, General Secretary, KPFBA



Dr Anjan Goswami, General Secretary, KPFBA

Impact of online meetings among the marketing managers is remarkable towards maximising live broiler price in the state. Technology has been playing a significant role. There is a free flow of information and effective communication under the same umbrella leading to an higher bargaining power for the producer companies and there by optimising the broiler pricing decision.

Yes, definitely it's very effective for demand and supply estimation and there by fixing a much realistic price benefitting all the stakeholders of the sector.

I define this drive as an effort towards converting competition into collaboration. Initially the participation was sluggish, producer companies were not very confident about revealing production data in front of competitors. We started with a few companies representation first, have kept reinstating to others on importance of sharing data for demand and supply, estimation and effective price decisions,



gradually when the results have become evident, one by one most of the major producing companies have started to participate including even the non members of KPFBA.

I hereby take the opportunity to extend my heartiest gratitude to the president of the KPFBA

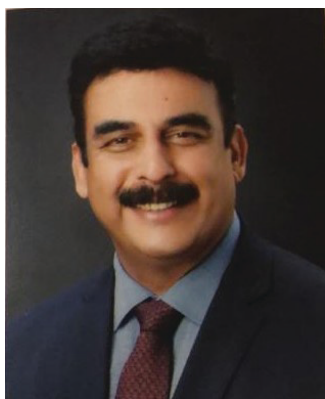
Dr Sushant Rai for all the support and co-operation, the active initiatives by Chairman, Broiler Coordination Committee, KPFBA, Mr Manjesh Kumar

Jadav, MC Members of the Association, the member of the KPFBA, the producer companies, Executive Secretary of KPFBA Inayatullah Khan and all the marketing heads of the producer companies without whom this entire mission would not have been made possible.

**Responding to the questions from Poultry Fortune, Dr Sushant Rai, President, KPFBA; Mr Manjesh Kumar Jadav, Chairman, KPFBA and Dr**

**Our Association is fortunate to emerge as a robust body to take innovative and latest trends to revive and develop poultry market**

*- Dr Sushant Rai, President, KPFBA*



**Dr Sushant Rai,  
President, KPFBA**

**Anjan Goswami, General Secretary, KPFBA gave their views. Excerpts:**

Our association is fortunate enough to emerge as a robust association to take innovative and latest trends to revive and develop poultry market because, we get very good support and cooperation not only from our members but also non-members too. We

work together not only with entrepreneurs, but also poultry veterinarians (IVPI), scientific community, policy makers synergistically. All our past presidents continue giving us their blessings and guidance, and enriching us. In addition to this we have very active executive secretary, Mr Inayath Ulla Khan.

KPFBA is quick to adopt new technologies and management tools to cater to its needs, such as, tele-conference facilities, video conference facilities, work from home / anywhere etc. In the time when we could not meet each other or host any meetings or seminars, the tele-conference and video conference made it possible to interact more frequently and effectively too, thanks to pandemic which brought all the

stakeholders together atleast on virtual meets. The lockdown or pandemic did not stop us in conducting our regular technical seminars too – this time we hosted four technical seminars online using Zoom (webinars) and attracted huge participants from the subcontinent, which otherwise we used to get participants only from our state in regular seminars.

KPFBA has made more than a dozen whatsapp groups each to cater to specific vertical (Parent birds, Hatching eggs, Day old chicks & Broilers), or issues at hand for effective coordination. Our members and their representatives / participants are quick enough to answer any query in the specific groups with their valuable inputs. Coupled with this we have our executive secretary who ensures to keep an eye on all the discussions and prepare required plan of action for its execution. The collective decisions of the association are being effectively executed by our secretariat.

KPFBA firmly believes that communication is the key. Numbers don't lie, data collection and compilation is the fundamental strategy used in KPFBA.

KPFBA sensed the danger which this ongoing pandemic bring to the poultry sector in the initial stages itself and started taking corrective measures as soon as the pandemic erupted in its epicentre. The rumours connecting chicken with corona in February 2020 ignited us to be on our tip of the toes. KPFBA defended the anti poultry social media campaigns by releasing print

advertisements in multiple daily newspapers, posters in social media and on ground at retail shops and we also ran radio campaigns in five FM radio stations. In addition to these, we also lodged complaints against anti poultry campaigners and sent legal notices too. We made lots of representations for poultry sector at various levels such as Local Panchayaths, Deputy Collectors of each district, the municipal corporations, BBMP, Union Agricultural Ministry, Union Finance Ministry, Union Animal Husbandry Ministry and the Prime Minister's Office.

#### **On the role of Associations**

Associations play a critical role in the welfare and development of any sector which it deals with by establishing best practices, technical and management training programs or seminars, technical standards to be adhered by its members, representing the issues and challenges faced by our sector and members to the Government at the respective levels and Policy interventions if any, lobbying collective market promotional activities and to defend any attacks on poultry sector. Before all, its focus should also be to establish collaboration between its member companies. It will be crucial for all the breeders operating in our state to take up membership with us to ensure we all grow together by helping each other and bring nutritional security to our country.

In Chicken sector, either we all win or we all loose in the market, hence it is important to bring all the broiler producers

on a single platform irrespective of breed or membership affiliation. Even though there is a healthy competition, which is good for any product or market, no one wants to lose their margins. As poultry products are livestock and perishable goods, we have to be on our tip of our toes not to go below certain benchmark which the association sets. If one sells at X rate, then the other will tend to sell X-1 or X-2, and this series continues making the market to crash. The middle men were taking undue advantage of this practice.

When we started our daily two online meetings, all have seen visible results. Also our executive secretary's daily meeting reports featuring market observation, marketing managers collective Suggestions / Recommendations to the BCC-KPFBA, names of participating companies / producers and their representatives – not only helped the association to take informed and participated decisions but also enlightened all the producers in our state to join hands in this platform.

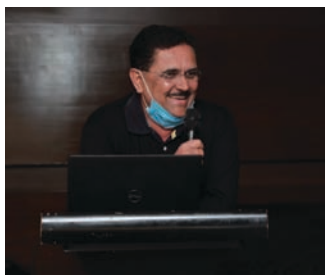
I thank all the marketing managers and companies mentioned below, who are consistently participating daily twice and giving good results, and our executive secretary Mr Inayath Ulla Khan for conducting it on a regular basis without a single day off since it started. I also thank Mr Manjesh Kumar Jadav – Chairman, Broiler Coordination Committee, KPFBA for his advice and consistent motivation to the virtual team.

### Representatives of Companies

1. VHPL, Mr Anil Kumar D. L
2. Komarla Feeds, Mr Athindra Kumar
3. Sriya Farms, Mr Dhamotharan
4. Monarch Hatcheries, Mr Bhaskar Munireddy
5. Nanda Group, Mr Pathy
6. Nutri Feeds & Farms Pvt Ltd, Mr Hegde V.G
7. Lotus Farms, Mr Veerendra
8. SKM, Mr Ganesha
9. IB Group, Mr Kerudi
10. Suguna Foods - Bangalore, Mr Sanjeev Manoj Kumar
11. CP India, Mr Shivkumar
12. Banashankari Agro, Mr Ramesh
13. Suguna Foods – Mysore, Mr Puttaraju
14. Life Line Feeds, Mr Shamsundar
15. CP India, Mr Appa Durai.

### Coordination achieved

- Manjesh Kumar Jadav, Chairman, BCC - KPFBA



**Manjesh K. Jadav,**  
Chairman, BCC - KPFBA

There is a lot of impact by conducting Marketing Managers meetings which achieved good coordination leading to sell Eggs and Chicken for better price, under cutting between producers has come down. We now started getting better price than Tamil Nadu, South Andhra Pradesh and Kerala. There is a good competition among the Marketing Managers to sell for a better price.

### Contn from Page 30 : VIPWA webinar on Entrepreneurship Opportunities in Poultry Sector

regarding consumption of egg and poultry meat. He further said poultry sector can play a significant role in making Self Reliant India. Dr Shukla also briefed about the government support to develop poultry sector in the country. He urged the budding veterinarians to explore the poultry allied fields also, such as poultry feed industry, poultry disease diagnostics, vaccine production etc. Dr Shukla also answered the queries of many participants.

Lastly, Dr Shukla discussed about the National Education Policy which will be now Transformed Education system with 5+3+3+4 year course. Almost all the regulatory bodies will go off including VCI, only higher education commission will be there rest will be only suggestive bodies. One university in every district with not less than 3000 students has

been envisaged. University will not have affiliated colleges or institutions and every stream will be open to the students. This system will be more student centric, proposed with ABC system that is Academic bank for Credits and multiple exits system will be available to the students. There will be credit management system with multiple institutions options. So, some new thoughts with some innovations are there in New Education Policy. Main aim is that people all over the world should be attracted to India as education hub.

The webinar was live on the Facebook page of VIPWA and more than 4000+ views were recorded. VIPWA was established in year 2008 and it's an association of 230 vets working in private sector and staying in Pune.

## VISION



<http://www.eatingwell.com/article/7677520/health-benefits-of-eggs/>

Eggs may be good for eye health.  
Egg yolks contain the carotenoids lutein and zeaxanthin.



Sunday ho ya Monday  
roz khao ande



WEEK NO :41 DATE :07.10.2020

Courtesy: NECC



# Innovista - Vetina Enrich Poultry industry on Gut Integrity and Anticoccidial Program Planning



**Dr Sudheer Rukadikar,**  
pathologist and freelance  
consultant from Pune

Dr Shaveta Sood, Marketing Head, Vetina Animal Health LLP, the marketing tie up company of Innovista Feeding Solutions Pvt Ltd organized a webinar on 12 September 2020 with key speaker Dr Sudheer Rukadikar, an eminent pathologist and freelance consultant from Pune and Dr Sekhar Basak, Managing Director, Innovista on Gut



**Dr Sekhar Basak,**  
MD, Innovista Feeding  
Solutions Pvt Ltd

Integrity and Rational use of Anticoccidials in broiler nutrition.

The live webinar was attended by over 450 delegates on zoom and had a viewership of over 1000 plus on Facebook live. Dr Rukadikar discussed about

bacterial, viral, protozoal nutritional and toxic causes for damages caused in the GI tract of chicken and also highlighted solutions to maintain a healthy gut. The major solutions suggested Dr Rukadikar to maintain a healthy gut are – ensure good quality feed with minimum non start polysaccharides, follow proper anticoccidial program, periodical lesion scoring to ensure proper



**Dr Shaveta Sood,**  
Marketing Head,  
Vetina Animal Health LLP

intestinal health, prevention of entry of bacterial and viral infective agents in the gut and lastly prudent use of antibiotic growth promoters and natural growth promoters to maintain a healthy gut.

Dr Sekhar Basak highlighted on the relationship between the protozoal disease coccidiosis caused by Eimeriaspp and bacterial disease necrotic enteritis caused by clostridium perfringens. He claimed coccidiosis triggers necrotic enteritis and a good anticoccidial program planning for the whole year

therefore the producers need to rationally use anticoccidials and AGPs with scientifically and judiciously designed rotation and shuttle programs so that we can extend the use of the



can ensure a healthy gut and super performance for producers. Further Dr Basak discussed about anticoccidial polyether ionophores and synthetic chemicals and established the fact about how wide dosage range of anticoccidials can ensure good performance and also minimize chances of low efficacy or toxicity, that is a major limitation with drugs having narrow dosage range. He illustrated the theory giving examples of ionophores and chemicals in both categories of wide and narrow dosage ranges and how their usage is extended or limited for this reason. He voiced a strong message to the audience that there is no new product in the pipeline when it comes to anticoccidials and

currently existing product in a long run. The presentation by both speakers was followed by a questions from the attendees which were addressed by the panel to the satisfaction of the participants.

Mr Prakash Khair, CEO, Vetina thanked the participants and the speakers in his address. The distribution partnership of Vetina with Innovista Feeding Solutions which started in the beginning of the lockdown in the country in March has taken off with flying colors, with Vetina steadily and confidently spreading across the trading circles in all zones with strong brands from Innovista in the AGPs, Anticoccidials and natural products space.



Courtesy: NECC



# The Perfect Parent

## ROSS® 308 AP

“

“It's good to now have in India the #1 breed in the world.”  
– Integrator, AP



**MORE EGGS | MORE CHICKS | EASY TO MANAGE  
CAGE OR DEEP LITTER**

FLOCK AGE (WEEKS)	HEN HOUSED NUMBER	LAYING MORTALITY %
64	F 28902    M 3107	ACT 10.7    STD 8.4

CUM HE/HH	HATCHING EGGS ABOVE STANDARD
ACT 183.5    STD 168.4	15.1



aviagen.com

Elayamuthur Post, Gandhinagar,  
Udumalpet Taluk, Tiruppur - 642 154.  
Tamilnadu, India. PH: 04252 233650.

## ROSS 308 AVAILABLE NOW

Please contact :

North    - Harsh    - 917 956 8382  
Center    - Dr. Jayant    - 981 200 9778

# The Best Broiler

## ROSS® 308 AP

“The AP chicken is tastier and juicer and consumers like it very much”. On Line Retailer



GROWS FAST | EATS LESS | LIVES WELL | MEATY

RESULT PERIOD	FLOCK SIZE	MEAN AGE (IDAYS)	BW
September-2020	14,477	32.29	2,261

Mor%	CFCR	DAILY GAIN	EPEF
5.24%	1.399	70.0	455.4

### AP PARENTS ALL INDIA

Please contact :

South - Mohan - 944 259 0338

National - Mani - 979 188 1144

Aviagen®



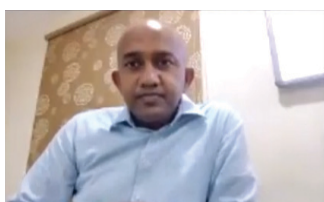
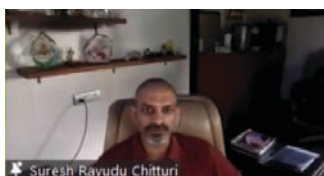
# IEC Chairman Suresh accomplishes mission to create awareness on goodness of Eggs

## World Egg Day Celebrated



**Suresh Rayudu Chitturi, The IEC Chairman & Managing Director, Srinivasa Farms Pvt Ltd**

The spread of COVID-19 has affected almost all spheres of human life. In India, we are all navigating through the pandemic crisis. Industries and businesses are grappling



**Panel discussion among Suresh Chitturi, Dr Raghav Sunil, and Sanjoy Mukherjee**

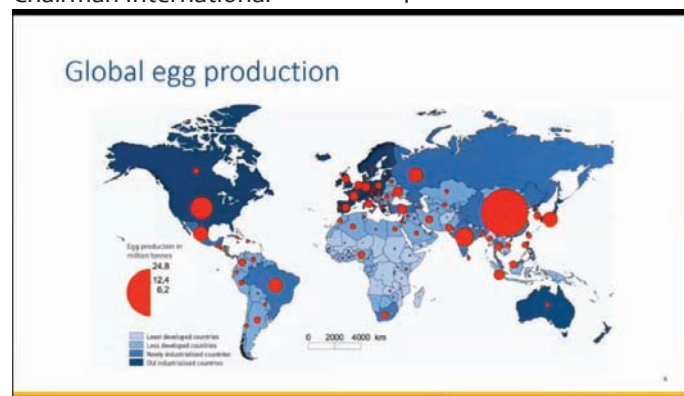
with this unforeseen crisis and challenges. IEC, under Suresh Chitturi's leadership had accomplished the mission to create maximum

awareness on the goodness of eggs through various initiatives to drive the celebrations of World Egg Day month (9th September - 9th October). Srinivasa launched activities and multiple campaigns across the social media platforms to reach out to create awareness be it in building excitement through an Egg quiz that tested the knowledge of eggs, running an egg recipe contests that had seen many egg lovers sharing their own curated egg recipes, the inspiring egg infographic posts, expert blogs, celebrities and health experts egg endorsement videos have all garnered an incredible amount of engagement through their likes and shares by the audience setting a milestone.

The IEC Chairman, Suresh Chitturi, the egg champion undeterred and driven by his mission even in the pandemic times not leaving any stone unturned to make the nutrition of eggs more affordable and accessible to the millions across the globe with his unrelenting efforts of networking. Suresh led many insightful live webinars connecting with the Industry leaders and health experts of national and international reputation who shared their knowledge and experience with enthusiastic participants across a variety of key and relevant contemporary topics on increasing the awareness and importance of the eggs.

The World Egg Day month long celebrations concluded with the World Egg Day live webinar - "Egg, much more than the perfect protein- An Egg-ceptional Superfood". with eminent speakers like Suresh Chitturi, Chairman of IEC (International Egg Commission) along with Tim Lambert, Former Chairman International

In his opening statement, Suresh Chitturi said "The egg supply chain has remained strong in 2020. Even during the pandemic, egg farmers worked with gusto with their partners to deliver fresh, local, high-quality eggs to India. That's why this World Egg Day, we're expressing our appreciation for their contribution, and the importance of eggs. When it mattered most, they delivered, as we know eggs have been part of our food table for generations enriching our proteins requirement."



Egg Commission & CEO, Egg Farmers of Canada, Dr Raghav Sunil – MS Orthopaedics, and Sanjoy Mukerji – CEO, Indian Poultry Review, discussed case studies and shared business insights about the industry during this new normal, as we continue to fight COVID pandemic. They highlighted – egg as a healthy diet.



**Webinar by Tim Lambert, Former Chairman International Egg Commission & CEO**

Tim Lambert, said "I believe the egg industry will continue its exponential growth in India, Asia and around the world. as we

**Congratulations**  
#EggsAreIncredible - Quiz Contest WINNERS!

**Celebrating world egg day**  
MONTH  
Srinivasa Farms  
Eggsperts.



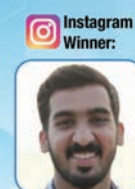
**Ramesh Yadlapati**  
Hyderabad, Telangana



**Dr. Ashok Paila**  
West Godavari, A.P.



**Pravina Sathesh**  
Chennai, Tamil Nadu



**Shailesh Krishna**  
Mangalore, Karnataka

**Quiz Contest Winners**





**Rana-Daggubati**

enhance the efficiencies, sustainability, at the farmer level to further grow the outreach of this efficient animal protein. Eggs have a positive impact on climate change. Eggs are a key part of diet they are also

Asian farmers to make egg production viable and sustainable.

An interesting panel discussion among Suresh Chitturi, Dr Raghav Sunil, and Sanjoy Mukherjee, about how "Egg, much more than the perfect protein- An Egg-ceptional Superfood", discussed the importance to keep up immunity at a high level to fight COVID. A Q & A session followed by panel discussion had various questions from participants on egg consumption and egg being



**Srinivasa Farms - Egg Distribution**



**Egg distribution**



**Egg are Incredible - Quiz**

affordable animal protein. It is also relatively easy to produce and scale-up. We are working with

part of our healthy diet. The highlight of the panel discussion had facts about the ability to tackle any

health hazard that is related to immunity and nutritional level of one's body. Having an egg per day will give a sustainable protein of choice for consumers. With 6% of Vitamin A and 6.3 grams of protein in one egg, we consume just 75 calories, the egg is a super protein food for individuals who pursue fitness or maintain a healthy weight.

Studies demonstrate that eating eggs can lower the risk of heart disease in healthy people. Despite containing cholesterol, eggs contain high-density levels (HDL) or "good" cholesterol. Research shows

that people with higher levels of HDL generally have reduced risks of heart disease.

Suresh who adores eggs himself said as an egg farmer I do raise awareness and educate others about the nutritional facts attached to eggs through my conversations on social media, and business networking events. As an Industry body, we also conduct from time to time activities including playing some games related to eggs, painting, decorating the eggshell, conducting online quizzes related to eggs, etc.



**Egg distribution**



Multi-purpose disinfectant



**ALL OVER  
ALL PURPOSE...**  
*There is nothing else to say...*



As timely tested & trusted brand  
against **Avian Influenza Virus**



- Complete & chemically balanced
- Biodegradable & high residual effect
- Effective on over: 20 virus families, 43 bacterial genera, 27 fungal genera
- Non toxic, non irritant & no obnoxious smell hence can be used in presence of birds
- Effective even at 400 ppm hardness & 5% organic matter

**A Well Proven Brand  
Since Two Decades.**



**VENKATESHWARA B.V. BIOCORP PRIVATE LIMITED**

(An ISO 9001:2015, OHSAS 18001:2007 & GMP Certified Company)

Venkateshwara House', S. No. 114/A/2, Pune-Sinhagad Road, Pune-411030

Tel.: (020) 24251803, Fax: +91-20-24251060/24251077, Website: [www.venkateshwarabvbiocorp.com](http://www.venkateshwarabvbiocorp.com)



# Looking for Outstanding Results?

When targeting key respiratory and intestinal diseases

- + CRD
- + ORT
- + NECROTIC ENTERITIS

- ✓ GREAT VALUE
- ✓ FAST RESULTS
- ✓ POWERFUL
- ✓ TRUSTED



*Stay Ahead*

Poultry operations are seeking reliable solutions for every day reoccurring key economically important diseases like chronic respiratory disease, ORT and necrotic enteritis. **Aivlosin** offers you outstanding results and is trusted when targeting infections in parent stock, replacement birds and broilers. Ask your successful colleagues and the ECO Animal Health representatives for more information.



Aivlosin<sup>®</sup> and Valosin<sup>®</sup> are registered trademarks of ECO Animal Health Ltd, United Kingdom

USE MEDICINES RESPONSIBLY

For further information please contact:

Vibrant Remedies (I) Pvt Ltd  
Tel : 080-65353837 , 9902071269  
[marketing@vibrantremedies.com](mailto:marketing@vibrantremedies.com)  
[www.aivlosin.com](http://www.aivlosin.com)



# Effects of phytogetic feed additives on bird health

Andreas S. Muller

Senior Manager, R&D, Poultry, Delacon Biotechnik GmbH.

## Highlight Points

► Performance improvement - Increases nutrient digestibility (+ 7 % crude protein, ↑ AA, + 3 % crude fat), Enhances performance (- 2 % FCR, + 1.3 % BWG). ► Health support - Improves anti-oxidant status (↑ SOD, ↑ GSH-Px). ► Emission reduction - Reduces noxious gas emission - reduction of NH<sub>3</sub> (up to 50 %). ► Profit increase – ROI of 3:1 and / or application of matrix values to reduce costs / ton of feed. ► 100 % phytogetic - a plant derived (phytogetic) feed additive for poultry using a patented micro-encapsulation technic to protect volatile actives (molecules).

From January 1st, 2006 onwards in the European Union (EU) antibiotics were banned as growth promoting feed additives. As the first and currently single Asian country the Republic of South Korea followed the EU example in 2011. It can be expected that numerous further big countries in the world will also remove feed antibiotics within the next few years.

The protection of consumers health is the main reason for these decisions. However, the removal of antibiotics at the same time means a big challenge, since alternative substances should be comparably effective with regard to their impact on the productivity of farm animals and with regard to the preservation of animal health.

### Promising alternative

Within the alternatives to antibiotics, phytogetic substances represent the most promising class of feed additives. This opinion is based on the availability of an infinite number of available plants with highly active ingredients. The spectrum of effects mediated by plant derived compounds includes

the disturbance of microbial communication, antioxidant properties, and anti-inflammatory effects.

In this article, two aspects of selected phytogetic compounds are looked at in more detail:

- Disturbance of microbial communication.
- Antioxidant and anti-inflammatory effects.

With regard to the efficiency to protect farm animals against disorders caused by pathogenic microorganisms, it has been frequently postulated, that phytogetic substances (in particular essential oils and their compounds) exert bactericidal effects. By definition, the term 'minimum inhibitory concentration' (MIC) towards a micro-organism (MO) means a reduction of MO viability by more than 90%.

The minimum bactericidal concentration (MBC) means a reduction of viability by more than 99%. Tables 1 and 2 give an overview of the MIC concentrations of selected essential oils and essential oil compounds against several micro-organisms.

Plant origin of essential oil	Bacteria species				
	Escherichia coli	Salmonella typhimurium	Listeria monocytogenes	Staphylococcus aureus	Bacillus cereus
	MIC (estimated range) µL/mL ~ mg/mL ~ g/L ~ kg/t				
Rosemary	4.5 – 10.0	>20	-	0.40 - 10	0.20
Oregano	0.50 - 1.2	1.2	0.20	0.50-1.2	-
Thyme	0.45 – 1.25	0.45 - 20	0.15 – 0.45	0.20-2.5	-
Sage	3.5 – 5.0	10.0 – 20.0	0.20	10.0 – 20.0	-
Clove	0.40 – 2.5	>20.0	0.3	0.40 - 2.5	-

Table 1. MIC values of selected essential oils (Burt, 2004).

Essential oil component	Bacteria species				
	Escherichia coli	Salmonella typhimurium	Listeria monocytogenes	Staphylococcus aureus	Bacillus cereus
	MIC (estimated range) $\mu\text{L/mL}$ ~ $\text{mg/mL}$ ~ $\text{g/L}$ ~ $\text{kg/t}$				
Carvacrol (Oregano)	0.25 – 5.0	0.22 – 0.25	0.37 – 5.0	0.17 – 0.45	0.18 – 0.90
Thymol (Thyme)	0.22 – 0.45	0.07	0.45	0.15 – 0.22	0.45
Citral (Lemon)	0.55	0.5	0.5	-	-
Eugenol (Clove)	1.0	0.50	> 1.0	-	-

**Table 2. MIC values of selected single compounds from essential oils (Burt, 2004).**

Neglecting an additional dilution effect of the feed in the intestine, the MIC concentrations give evidence that genuine bactericidal effects of phytochemicals in the animal cannot be obtained with phytochemical additives.

Essential oil concentrations in the feed, unrolling bactericidal effects, would:

- Result in a reduced feed intake and performance due to the strong taste of the oils.
- Be economically unmanageable.

#### Quorum sensing

Quorum sensing (QS), or bacterial cell-to-cell communication, is a mechanism of gene regulation in which bacteria coordinate the expression of certain genes in response to the presence of small signaling molecules (inducers).

This regulatory mechanism has been shown to control virulence gene expression in many different pathogens. Virulence factors include gene products involved in motility, adhesion to the host's intestinal epithelium, host tissue degradation, iron acquisition, and toxin production. The abundance of the signaling molecules in the environment thereby directly reflects the bacterial population density. If a certain threshold of inducer concentration is reached, the bacteria start to produce virulence factors, leading to the outbreak of the disease in the host.

The best characterized QS signaling molecule of numerous Gram-positive and Gram-negative pathogenic bacteria is N-Acyl-Homoserine Lactone (NAHL). Various pathogenic bacteria like *Pseudomonas aeruginosa*, *Vibrio spp.*, *Burkholderia cepacia*, *Yersinia enterocolitica*, *Escherichia coli* and *Salmonella spp.* have been shown to employ QS to regulate their virulence and pathogenicity.

Some bacterial strains use further sensing molecules, like catecholamines, in addition to NAHL sensing. Selected phytochemical substances interfere with QS of bacteria and therefore possess the ability to suppress the virulence of bacteria. This, so called quorum sensing inhibition (QSI), can be studied very well in the model organism *Chromobacterium violaceum*, which produces the fluorescent purple dye violacein due to achievement of the threshold population density.

Thus, *Chromobacterium violaceum* can be used as a screening tool to test the QSI potential of selected substances. However, to assay the impact of QSI towards pathogenic micro-organisms, other readout parameters are needed. In the context of QSI by phytochemical substances it could be shown that clove oil strongly inhibited violacein fluorescence in *Chromobacterium violaceum* at already subinhibitory concentrations (Table 3). Promising results for QSI by essential oils were also reported for *Campylobacter jejuni* and the enterohaemorrhagic *E. coli* strain 0157:H7.

Clove oil concentration	g/100kg (kg/t)	Pigment production	OD of violacein	Reduction of absorption (%)	Cell viability Log CFU at $10^5$ dilution
Control (0.00)	0 (0.0)	+++	0.342	0.0	8.14
0.04	40 (0.4)	+	0.175	48.0	8.12
0.08	80 (0.8)	+	0.141	58.0	8.05
0.12	120 (1.2)	±	0.074	78.4	8.02
0.16	160 (1.6)	±	0.026	92.3	7.29
0.20	200 (2.0)	-	0.000	100.0	

**Table 3. Cell viability and quorum sensing inhibition of CV, incubated with clove oil (compiled from: Khan MS, Zahin M, Hasan S, Husain FM, Ahmad I. (2009): Inhibition of quorum sensing regulated bacterial functions by plant essential oils with special reference to clove oil. Lett Appl Microbiol. 49: 354-360).**

In the first mentioned study, already 0.10mmol/L carvacrol, corresponding to 15mg carvacrol/L, significantly inhibited the motility of *Campylobacter jejuni*. In the latter study, 1 mmol/L carvacrol (150mg/L) induced a strong heatshock response in *E. coli* and inhibited flagellin synthesis, essential for the motility of the pathogen. These results impressively show that phytogetic substances have the potential to disturb pathogenic micro-organisms very well.

In the future it is therefore of significant interest to force research into studying the efficiency of phytogetic substances on QSI of pathogenic bacteria.

In the post-antibiotic-era' the disruption of QS of pathogenic bacteria by phytogetic substances represents one core strategy to preserve farm animals from infectious diseases of the intestine.

### Additives and inflammation

Due to the ban of growth promoting antibiotics, the infection of farm animals with species specific pathogenic micro-organisms represents an issue of growing importance. In numerous cases, the infection with pathogens, does not result in the full-blown clinical picture, but leads to a severe reduction of performance and causes economic damage. This aspect is well known with regard to the infection of chickens with *Eimeria tenella*.

Irrespective of its degree, an infection with intestinal pathogens induces an inflammatory response in the hosts. During an infection with pathogenic micro-organisms, intestinal cells secrete a variety of cytokines in order to attract cells of the immune system. In the early stages of immune response, macrophages, entering the affected tissues, produce a strong inflammatory reaction. In later stages T cells are also involved in the promotion of inflammation.

The most important intra cellular transcription factor, triggering inflammation in a cell is the Nuclear factor 'kappa

light-chain enhancer' of activated B-cells' (NFkB). NFkB on the one hand induces the synthesis of cytokines, responsible for the further recruitment and attachment of immune cells (for example. IL6, VCAM, ICAM) and of Cyclooxygenase 2 (COX2), producing pro-inflammatory prostaglandins. On the other hand, NFkB action is needed to produce anti-inflammatory cytokines, responsible for the termination of an inflammation (for example IL- 10), and of antioxidant enzymes, which enable cell survival and help to terminate an inflammation.

The endogenous antioxidant enzymes, which are of particular interest for the termination of an inflammation are NAD(P)H Quinone-Oxidoreductase I (NQO I), Heme oxygenase I (HO I) and glutathione peroxidase 2 (GPx2).

A common feature of these mentioned antioxidant enzymes consists in their specific synthesis mechanism. Their transcription and synthesis take place, due to the release of the transcription factor 'Nuclear fac tor (erythroid-derived 2)-like 2' (Nrf2). In this context it must be mentioned that besides NFkB and oxidative stress, numerous phytogetic substances act as very strong Nrf2-releasing agents.

Curcumin from curcuma longa and the brassicaceae isothiocyanate sulforaphane are the best characterized inducers of endogenous antioxidant enzymes by triggering Nrf2-release. The induction of endogenous antioxidant enzymes concomitantly can reduce the severity of inflammation. In this context it could be shown that the induction of GPx2 reduces COX2-dependent prostaglandin E2 synthesis.

The results of our own investigations with growing broilers revealed a considerable induction of a broad panel of Nrf2-dependent antioxidant enzymes and of phase II enzymes in the jejunum, by supplementing the diets with 150g/t turmeric oil or with sulforaphane-containing broccoli extract. In an

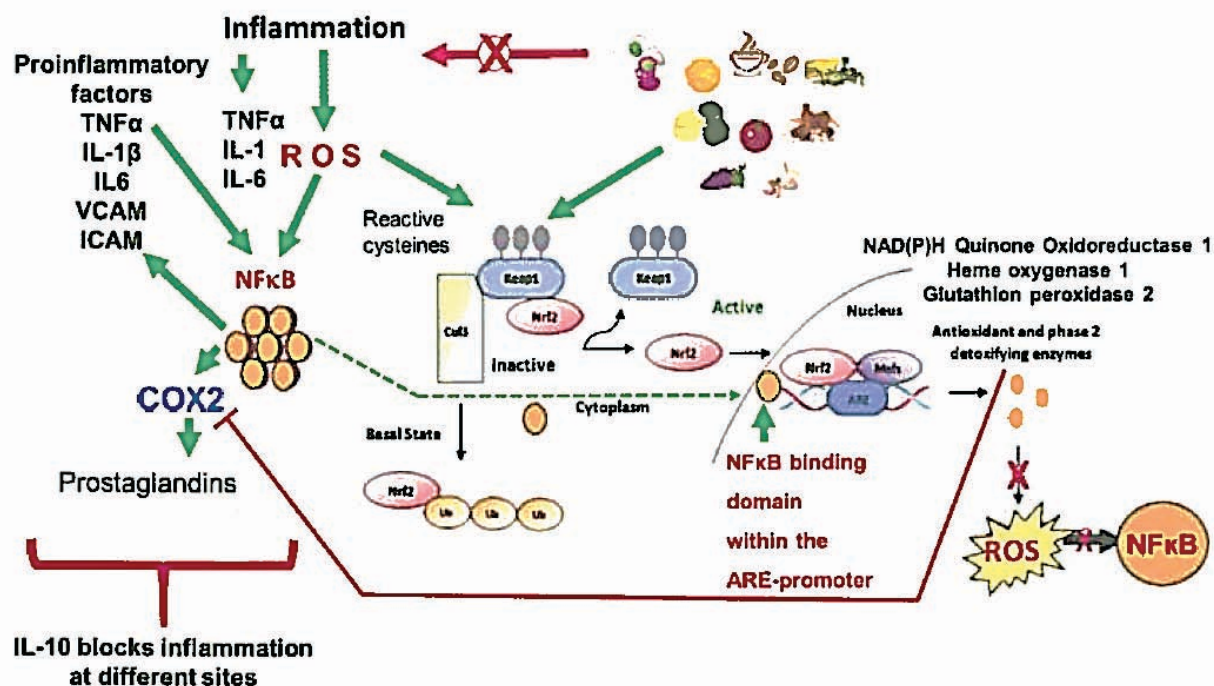


Fig. 1. Interfaces between inducible antioxidant enzymes and immune response.



own rat study, it could be demonstrated that sulphoraphane feeding significantly induced intestinal antioxidant enzymes, while reducing the expression of COX1, COX2, VCAM, and Monocyte Chemoattractant Protein 1 (MCP1). In a recent study with *Eimeria tenella* infected broilers, the addition of capsicum and turmeric oleoresins to the diets strongly reduced intestinal lesion score and the expression levels of main pro-inflammatory cytokines.

The results of these and numerous further trials indicate that various phytochemical substances have promising effects with regard to the reduction of pathogen-induced intestinal inflammations in farm animals. In the future, research into the screening of anti-inflammatory phytochemical substances should be focused in order to develop phytochemical products with customized effects against species specific intestinal diseases. Moreover, there is a need to develop products with

an increased content of active substances for the treatment of acute intestinal inflammation.

### Conclusions

- Due to their content of an infinite variety of active ingredients, phytochemical substances represent one of the most interesting and important classes of current and future feed additives.
- Phytochemical substances beat the potential to effectively repress the pathogenicity of intestinal microorganisms and to prevent and treat infectious diseases of farm animals.
- In the future a broad-based research is needed to make the full potential of phytochemical substances usable in order to preserve the health of farm animals and consumers.

References are available from the author on request.

*Parag.Mahadik@venkys.com*

# Demand for value added eggs on rise

Rajesh Babu<sup>1</sup> and Kishore Gedam<sup>2</sup>

<sup>1</sup>Owner – Krishna farms, <sup>2</sup>Techno Commercial Manager – Proteon Pharmaceuticals India Pvt Ltd

Value added eggs is not a new concept in the Indian Market. They have been available since over a decade. From fortified with vitamin D3 to low cholesterol eggs many varieties are available in the market. With the rise of demand from consumers for fortified eggs for health benefits, many poultry producers have started producing such eggs to full fill their demand in which both are getting mutually benefitted.

The educated people, mostly those working in the technology sector, are vigilant and pick products that suit their lifestyle; branded eggs with special features like low cholesterol, high DHM content and folic acid are well accepted.

Nowadays people are following the motto “Eat Healthy-Be Healthy”. They are now looking for value added food products which can help them in this journey.

The market of Branded eggs is therefore getting a much-needed boost in this situation. They are not only a good option for health enthusiasts who are always on a look out for good protein sources, but they also provide with added health benefits.

Industry experts believe that the Branded eggs consumption has been steadily on the increase and has reached almost 70% of its pre-COVID 19 consumption in September. It is expected to increase further to 90% by January-March 2021.

### 1) Awareness for healthy eating

The pandemic has certainly pushed people towards a healthy lifestyle. They are eating homemade and healthy food. This has led to increase in awareness about eating balanced food which is having right balance of nutrients especially proteins. Therefore, there has been a steady increase in the consumption of eggs and Chicken which are two of the cheapest sources of Protein in India. The People have also

started to recognise the importance of Hygiene in food. Thus, turning to buy Branded Eggs and packaged Chicken which ensure them about the quality of source and hygiene.

### 2) Presence of contamination in eggs

India is one of the largest egg producers in the world. While most countries have taken measures to sanitize the surface of the egg from contamination, no such measures are in place in India. Salmonella bacteria are quite prevalent on and in the eggs collected from retail outlets due to fecal contamination or infected layer hens.

### Awareness for Producers

#### 1. How to prevent salmonella at farm level

An integrated and holistic approach that focuses on farm, feed and health management can help protect birds from Salmonella colonization, invasion and lower Salmonella pressure in processing, thereby supporting the feed-to-food safety efforts of farmers.

### Feed hygiene

Several monitoring programs that have detected a wide variety of Salmonella serotypes in layer, breeder and broiler feed. They can often be traced back to feed material contaminated by Salmonella. Maintaining proper hygiene of all the feed raw material and final feed is a key to a successful Salmonella control program.

### Farm management practices

To control the transmission of Salmonella within broiler, layer and breeder operations, poultry farmers must follow and maintain proper hygiene practices. Make sure you conduct a flock sampling and risk analysis for Salmonella regularly in the farm.

Contd on Page 67

# Health, Hygiene and Routine Maintenance of Poultry in Covid Pandemic-Poultry Meat Perspective

Dr G. V. Bhaskar Reddy, Dr P. Amaravathi and Dr T. Prebavathy

College of Veterinary Science, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh – 517 502.

## Highlight Points

This article is about hygienic rearing of poultry and steps to be considered for hygienic farm management, measures to be taken for prevention contamination both at farm and processing plant were outlined. The importance of ante-mortem and post-mortem inspection and various microbial implications in poultry meat value chain also discussed. Finally working staff health and their hygienic staff management also elaborated.

### 1. Introduction

The production of healthy poultry meat depends on the maintenance of health and hygiene throughout the entire production system at farm level. This includes the maintenance of health at the point of production of the live birds, poultry transportation and processing. Consumer confidence is essentially considered during production and processing of poultry at adverse marketing conditions like different outbreaks and pandemics.

### 2. Measures at Farm

The following measures which can be taken to ensure good hygiene and to prevent diseases

- The processing operation should be located as far away as possible from other similar operations.
- Poultry houses and all equipment should be scrubbed clean with a high pressure hot water cleaner, detergents and disinfectants such as chlorine based chemicals, formaldehyde, 2% caustic soda solution or 1% quaternary ammonium compounds solution between raising batches of poultry.
- Chicks or eggs should be purchased from disease free flocks.
- Birds of one age only should be reared in each house.
- Birds of different ages can infect each other and young chicks are particularly vulnerable to adult disease.
- Feed should be procured in proper packaging or by bulk transport.
- The diet should be well balanced in sufficient quantities and obtained from a well-known source.
- Dirty litter and droppings should be removed from the poultry house.
- Overheating and overcrowding of the birds should be prevented.
- Poultry houses should be well ventilated; this is important

in maintaining correct housing temperature and humidity.

- Clothing, footwear, cleaning facilities and materials should be provided and laundered for all staff and visitors.
- A foot-bath should be installed containing disinfectant (such as an Iodoform) at the poultry house entrance and its use made compulsory.
- Veterinary advice should be sought at the first sign of disease in the flock. If this is not available, the producer may be obliged to slaughter in order to prevent serious recurrence of the disease in subsequent flocks.
- Dead birds should be removed as soon as possible from the rearing houses and disposed of by incineration or deep burial.
- Although the poultry sheds are designed to prevent their entry, rats, mice and insects are difficult to keep at bay. They should be destroyed if they infest the poultry house and feed store as they are carriers of disease.
- Cats, dogs and other animals should be prevented from entering the poultry house. Children should be discouraged from entry also unless they are attending to the birds or under instruction.

### 3. Prevention of contamination from outside

There are several sources of external contamination which should be prevented, reduced or controlled which includes:

- Visiting vehicles which could carry infection causing, microbes and spores. A delivery point should be located away from the poultry house and feed store to reduce contamination levels.
- Poultry crates or modules which are used constantly for transporting birds outside the poultry farm. These should be properly cleaned using disinfectant.
- Visitors must wash their hands and use the overalls and footwear provided.
- Staff should be actively discouraged from keeping poultry at home.

#### 4. Ante-mortem examination prior to slaughter

- a. In poultry processing, ante and post-mortem health inspection of birds is essential.
- b. Antemortem inspection (AMI) done by qualified veterinarian and AMI is needed to protect the health of the public and enable the veterinarian to monitor the health status of the flock.
- c. Poultry intended for slaughter should undergo AMI within 24 hours of slaughter and this should be repeated if the birds are subject to delay.
- d. AMI at the poultry processing plant may be restricted to detecting injuries received in transport if the poultry have been inspected fully at the farm of origin within the 24 hours immediately preceding the AMI and found to be healthy.

The AMI should determine:

- Whether the poultry shows symptoms indicative of a disease which can be transmitted to humans or animals. These diseases or conditions include some forms of Newcastle disease, Fowl Plague, Rabies, Salmonellosis, Pasturellosis, Ornithosis and others.
- Whether the poultry shows symptoms of a disease or of a disorder affecting their condition which may make the meat unfit for human consumption.

#### 5. Microbial implications at Farm Level

- Many precautions can be taken to assist with the microbiological condition of poultry and the poultry meat during processing.
- These precautions should start at the producer's premises where young birds are raised and the producer should take note of the advice offered by the veterinarian about design, operation, management, cleanliness and general health of the flock and its housing.
- Great attention should be given to seeking veterinary advice should the flock become sick.
- Poultry housing should be properly separated from other animal housing, human habitation and their animals.
- It should be kept clean while the birds are growing and thoroughly disinfected once the birds have gone for sale and slaughter.
- The containers for the birds should have been disinfected before birds are placed in them and the vehicle should have been similarly treated.
- Attention should be given to the cleanliness of the live-stock handlers, their clothing and footwear. They should be discouraged from keeping their own poultry at home.

#### 6. Microbial implications at Processing Plant Level

- Live birds should be handled quietly, kept off the ground and slaughtered using properly designed, maintained and cleaned equipment in a properly designed, maintained, cleaned and managed building.
- Attention is drawn below to the concept of cross contamination of poultry carcasses by micro-organisms.
- The most important areas to monitor are the reception

areas for the live birds, the scalding tank area, the defeathering machine (which can harbour undetected micro-organisms for years) and the chilling tank.

- Wash water from scalding and plucking contains many micro-organisms which can be distributed by aerosol as well as in flowing water.
- Poultry are processed rapidly and eviscerated through a small opening in the body cavity.
- The alimentary tract can split easily, spilling its contents over the carcass on both the outside and inside and process water used in washing, chilling and further processing can become contaminated easily.
- From the whole process, surfaces in the building and on machinery can become contaminated as can the hands of processing operators and their processing implements and each has the potential to contaminate the poultry carcasses further.
- The consequences of carcasses contaminated with micro-organisms on product quality and consumer health are well documented. They fall into two main categories. Those which cause spoilage of the meat and those which transmit pathogenic micro-organisms to the consumer.

#### 7. Spoilage Microbes Associated with Poultry Processing

- There are many forms of spoilage organisms but *Pseudomonas* spp., are the most important.
- *Pseudomonas* spp., found in large numbers on feathers but rarely in the alimentary tract.
- After slaughter of the bird, *Pseudomonas* spp., are destroyed in large numbers by the scalding tank as most do not grow or survive above 28°C but these are re-contaminate other carcasses in subsequent processing operations.
- Unless carcasses are washed thoroughly in super-chlorinated water and chilled promptly, the *Pseudomonas* spp., may be present in sufficient numbers to overcome competition from other micro-organisms, and grow at their optimum temperature thus spoilage of the carcass may result.
- Pathogenic organisms in poultry are responsible for gastro-intestinal disturbances in humans.
- *Salmonella* spp are found in the caeca of young birds and are transmitted from bird to bird at all stages of growth, handling and transport of the live bird via a faecal route.
- Cross contamination may occur during processing at the slaughter house.
- Under proper processing conditions, *Salmonellae* fail to grow rapidly in the processing plant and at temperatures below 7°C hardly at all. Rapid chilling of the carcass therefore, is recommended but *Salmonellae* may continue to thrive on carcasses subjected to temperature abuse and may then become a hazard to health.
- *Salmonella* spp attract the most publicity but are not the only organisms responsible for food poisoning.
- *Clostridia* spp, particularly *Clostridium perfringens* are also found in poultry arriving at the processing plant and these



are found in the caeca and colon of live birds.

- *Clostridium perfringens* infect live birds and cross contaminate at the processing plant like *Salmonellae* they are found in small numbers at the end of a processing operation provided operations are carried out efficiently.
- *Clostridium perfringens* do not grow well below 15°C and provided the bird is kept properly chilled and is well cooked at home, no real danger of food poisoning exists.
- However, some micro-organisms can withstand normal cooking temperatures and, if cooked poultry is left in warm conditions, can multiply quickly to cause food poisoning.
- *Staphylococcus aureus* and *Campylobacter jejuni* are also important micro-organisms in poultry processing. They survive within the body of poultry and readily cross contaminate other carcasses during processing. Once again, prompt chilling is necessary if their numbers are to remain at safe levels after processing.
- Many bacteria are washed away during processing, sufficient remain to cause problems if carcasses are not properly handled.
- Washing is not a very effective way of removing bacteria but they are found in the bottom of feather follicles and many creases within the skin which hold water, positions which are difficult to clean and conditions conducive to microbial growth.
- Simple washing is insufficient to remove all these organisms.
- Bacteria also attach themselves to the skin by a mechanism which is not fully understood. They form a film which is not removed by scalding or chlorination.
- Operational procedures have to be introduced to overcome these problems like rapid chilling, ice cold spray etc.

### 8. Postmortem Inspection

All parts of each bird should be inspected immediately after slaughter. To do this all parts of the carcass should remain identifiable until the veterinarian/meat inspector has declared the carcass fit for human consumption. This is best done if the viscera are left attached to the carcass.

The Postmortem Inspection (PMI) should include:

- Visual inspection of the bird
- Palpation and incision of the slaughtered bird, where necessary
- Investigation of anomalies in consistency, colour, smell and, where appropriate, taste
- Laboratory tests, where necessary.

The meat inspector/veterinarian is looking to see if the carcass is fit for human consumption. He may find an indication of: death resulting from a cause other than slaughter (e.g. stress, physical damage), general contamination (e.g. dirt), major lesions and ecchymosis (cuts and bruises), abnormal smell, colour, taste, putrefaction (decay), abnormal consistency, cachexia (emaciation, scragginess), oedema (swelling), ascites (congestive heart failure) and any infectious diseases.

If any of these conditions are found, the carcass should be set to one side and disposed of according to the nature of the condition.

### 9. Working Personal Health

- All working personals/staff who work in the poultry plant are handling meat which will eventually be eaten.
- The opportunity exists, therefore, for transmission not only of pathogenic organisms associated with poultry but also diseases associated with the operative.
- Poor handling techniques can also lead to cross contamination of spoilage organisms and reduce the shelf life of the product.
- As a consequence, there are several rules to be followed which can help to reduce these risks.

a) Every person who works where meat is handled should:

- Keep clean, this should include a daily bath and particular attention should be paid to hands, fingernails, arms, face, hair and other exposed parts.
- Wear clean light-coloured working clothes and headgear which can be easily cleaned.
- Hair should be kept under control, using a hair net if necessary.
- Impermeable boots should be worn and washed frequently, particularly when arriving, leaving and changing between normal working rooms.
- Protective and safety equipment such as wrist guards and chain-mail gloves may trap pieces of meat.
- They need frequent washing while in use and special cleaning at the end of the working day.
- Wash and disinfect hands every time work is started or resumed, particularly after a visit to the lavatory, smoking, eating, coughing, sneezing (using a handkerchief), handling money, garbage or any dirty material.
- Hand washing should be carried out as a matter of routine at very frequent intervals, using hot water (43°C), soap and a nylon nail brush as appropriate.
- Wash and disinfect hands and arms immediately after contact with diseased poultry.

b) Every person who works where meat is handled should not:

- Smoke or use tobacco while handling poultry meat or where there is poultry meat exposed and Tobacco should not be permitted in poultry processing areas.
- Eat, drink or use chewing gum, chewing sticks, sweets or put anything in, or touch, the mouth, nose or ear in any room where there is poultry meat.
- Scratch the head, handle money.
- Urinate, defecate or spit except in a lavatory.
- Wear loose or dangling clothing or jewellery which may be caught in machinery.
- Bring glass into the processing room. This raises the issue of wearing of spectacles and contact lenses by operative staff. Contact lenses are not recommended for production workers since they are almost impossible to find should they fall out. Spectacles, on the other hand are

unavoidable. The lenses should be checked for security in their frame and not worn if they become loose.

c) No person should handle meat or be near it if:

- Suffering from a communicable disease such as typhoid and paratyphoid fevers, salmonella infection, dysentery, infectious hepatitis, scarlet fever or a carrier of these diseases.
- Suffering from infectious tuberculosis.
- Suffering from an infectious skin disease.
- Suffering from gastro-intestinal disturbance, such as diarrhoea and vomiting
- Doing anything else which may involve a risk of contaminating poultry meat e.g. handling offal, live birds or money.

- Wearing an absorbent bandage on the hands, forearms or other exposed part of the body other than a waterproof dressing protecting a wound which is not purulent (discharging).
- Every person who is likely to handle meat should undergo an annual medical examination and receive a certificate from a qualified medical practitioner which states that there is no objection to that person handling poultry meat.
- The certificate, which is a confidential document, should be shown to and lodged with the manager of the poultry processing plant and may be shown to the official veterinary officer on request.

*vbreddylpt@gmail.com*

# Low pathogenic Avian Influenza (LPAI)

Hy-Line International

## Introduction

Avian influenza (AI) is caused by a type A influenza virus and is distributed worldwide in birds (11). AI viruses are classified by 16 hemagglutinin and nine neuraminidase subtypes. Of these, there are two important classifications: high pathogenicity avian influenza virus (HPAIV) and low pathogenicity avian influenza virus (LPAIV). Low pathogenicity avian influenza viruses circulate naturally in aquatic birds and are the primary reservoir for the disease (11). Spillover of LPAIV from aquatic avian species to commercial poultry or other animals occurs frequently. As LPAIVs replicate and spread in commercial poultry, they

can become adapted to the new host, causing disease production losses (11). In this

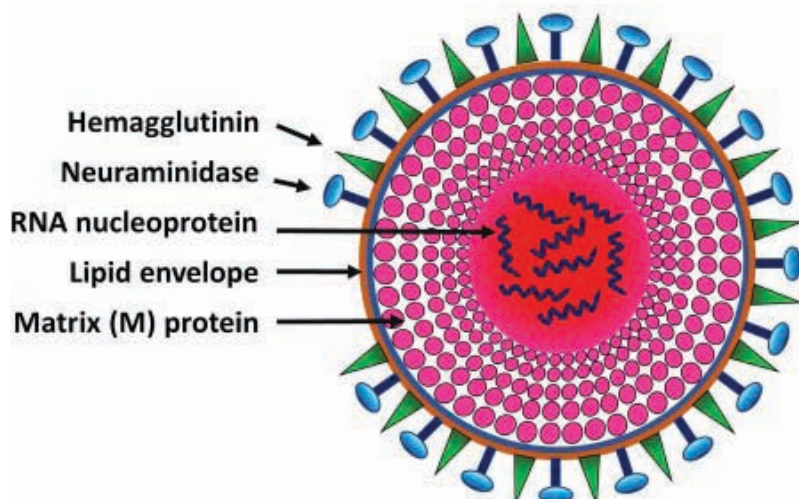
way, LPAIV infections can become endemic in areas of concentrated commercial poultry production, especially operations with poor biosecurity practices or a lack of effective control programs.

When clinically significant, LPAIV infections in laying chickens cause acute respiratory disease and egg production losses. The circulation of LPAIV over time increases the possibility of mutation or reassortment of genes important for virulence, which can result in the emergence of a highly pathogenic avian influenza virus

## The Influenza Virus:

- Family - Orthomyxoviridae, Genus - Influenzavirus A
- RNA, single stranded, negative sense, enveloped
- Possesses eight genes producing 10 viral proteins

- HA and NA proteins are prone to antigenic drift and shift
- Inactivated by most disinfectants and detergents
- Survives best in cool and moist environments



### Hemagglutinin (HA) and Neuraminidase (NA)

- Surface glycoproteins
- 16 HA and 9 NA subtypes
- HA is the most important for virus pathogenicity (virus attachment and entry into host cell).
- Cleavage of the HA protein is required for virus infectivity.
- HA is cleaved by trypsin that is present in respiratory and intestinal tissues.
- Targeted by the immune system to produce neutralizing antibodies.

Figure 1. Structure of the influenza virus.

(HPAIV). This occurs mostly commonly with H5 and H7 influenza virus subtypes. HPAIV causes an acute, severe, fulminating disease in most chickens, resulting in high death loss. Economic losses occur directly from disease and indirectly from loss of trade and restrictions.

Additional economic hardship comes with the cost of disease control (flock depopulation and clean up) (11).

#### ETIOLOGY

Avian influenza viruses (AIV) belong to the family *Orthomyxoviridae*, which is responsible for acute respiratory disease in many animal species. All AIVs are classified as *Influenza virus A*, which can be further classified serologically into 16 hemagglutinin (HA) and nine neuraminidase (NA) subtypes. HA and NA are glycoproteins located on the surface of the virus and are important for the virus attachment to host cells during infection (Figure 1). Hemagglutinin is the most important antigen in the bird's immune response against the virus and is used in AI vaccines.

Influenza virus strains are known to have a wide antigenic variation in the genes coding for HA and/or NA glycoproteins. The HA and NA surface glycoproteins are important for the virus to attach and infect the host cells.

Influenza viruses are subject to antigenic drift and shift of HA and NA genes. Antigenic drift is the result of point mutations in the HA and/or NA genes. Drift antigenic variants can emerge as a result of selection pressure of enzootic LPAIV infections and vaccine immunity. Antigenic shift is a more profound genetic change which results from a co-infection of two different influenza viruses in the same cell.

These novel genetic combinations may have increased virulence and transmissibility between avian species, especially from waterfowl to commercial poultry.

AIV of the H5 and H7 subtypes are more prone to antigenic drift and shift, which is why they are of primary interest in global monitoring programs. Sequencing of the H5 and H7 subtypes into LPAIV and HPAIV strains is used by the Office International des Epizooties (OIE) to determine which classification is present in field infection. The OIE is responsible for reporting cases of HPAIV infection to member countries and monitoring ongoing outbreaks. This has implications on the international trade of poultry and poultry products. While not classified as HPAI, it should be noted that there are several examples of non-H5 or H7 viruses that were officially classified by the OIE as LPAIV yet caused significant disease in poultry (8).

Strain	Countries of Occurrence	Clinical Signs / Production Losses	Zoonosis	Comments	Ref.
H9N2 (ongoing)	China, Southeast Asia, Indian Subcontinent, Middle East, North and West Africa	Moderate to severe respiratory disease; egg production drops	Rare mild respiratory symptoms	Endemic in many areas. Prevalent in live bird markets. Continuous circulation with other subtypes increases zoonotic potential	4,9
H6N2, H6N6 (ongoing)	China, Taiwan, Korea, Southeast Asia, South Africa	Moderate to severe respiratory disease; egg production drops	No	Endemic in many areas. Prevalent in live bird markets. Continuous circulation with other subtypes increases zoonotic potential	4,2
H3N1 (2019)	Belgium	Severe respiratory disease, 58% mortality and 100% egg drop	No	Older birds showed more severe clinical signs than youngbirds	5
H6N1 (2020)	Ireland	Sharp drops in egg production, increased mortality (low); green diarrhea	No	Culling of positive flocks involving >500,000 hens	7

#### VIRUS SUSCEPTIBILITY TO DISINFECTANTS AND ENVIRONMENTAL CONDITIONS

AIV are inactivated by most of the disinfectants commonly used in poultry facilities due to the presence of a lipid membrane surrounding, referred to as an envelope. Using detergents can break down this lipid envelope, which results in a loss of viral particle infectivity. The virus is inactivated by

heat and dryness, but can survive well outside the bird when contained in organic matter (nasal secretions, feces, dust, bird carcasses). The presence of organic matter limits the effectiveness of disinfectants. Cool and moist environmental conditions favor virus survival (11). Composting of bird carcasses and manure for at least 10 days at 60°C (140°F) can inactivate influenza virus (10).



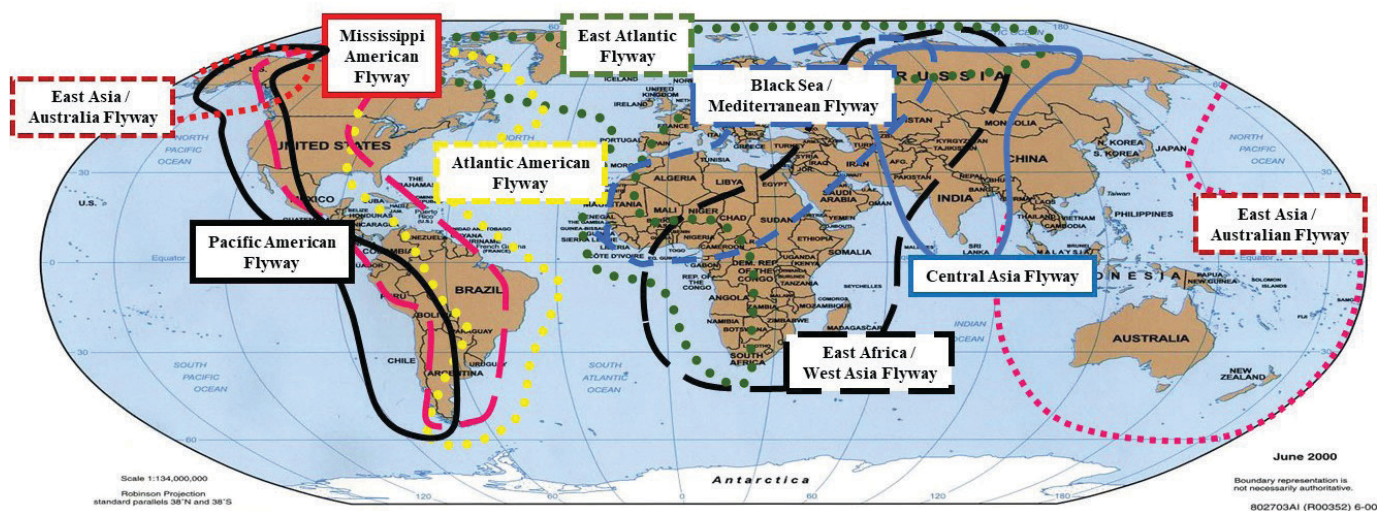
## Transmission

Transmission of LPAIV occurs easily among susceptible birds that encounter nasal secretions, aerosols, or feces from infected birds. Commercial poultry become infected by direct contact with infected waterfowl or materials containing viral particles via a lapse in biosecurity. Secondary transmission between and within commercial poultry facilities typically occurs by mechanical transmission via virus-contaminated materials or movement of infected birds. Important sources of infectious particles are: people, vehicles,

equipment, clothing, and footwear. High risk factors for transmission between facilities also include: crews and equipment involved in vaccination, manure handling, and transporting pullets and end-of-lay hens.

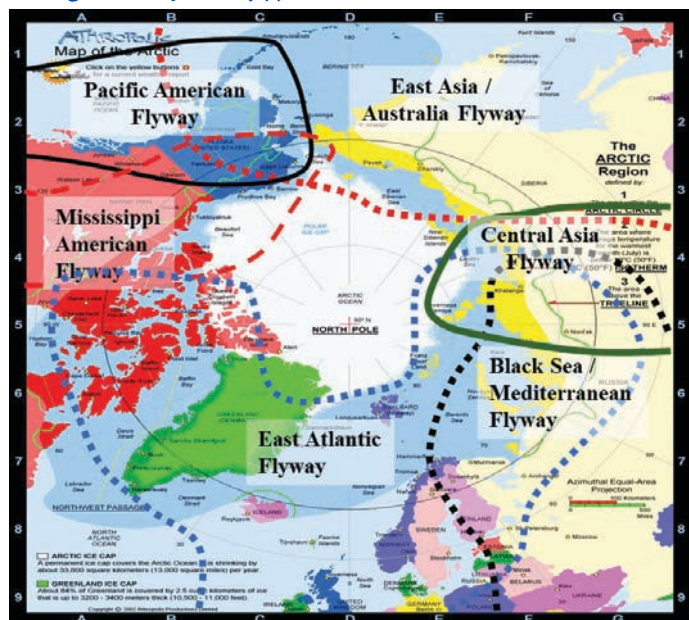
Most LPAI infections in aquatic bird species are subclinical (do not produce disease). LPAIV is transported over long distances by infected wild waterfowl during their seasonal fall and spring migrations. During these migrations, waterfowl congregate in high numbers, facilitating wide dissemination of infection

**Figure 2. Major waterfowl migratory flyways (1).**



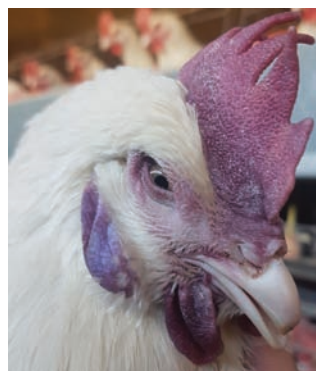
Spring migrations in particular bring waterfowl from all the major migratory flyways to nesting areas near the arctic circle (4). This makes it possible for intercontinental spread of influenza viruses where a virus originating from Asian waterfowl can subsequently spread to and infect European and North American waterfowl (6).

**Figure 3. During the spring migrations, the global migratory flyways converge in the Arctic region. For some species of aquatic birds, the nesting areas may overlap(1).**



## Clinical Signs

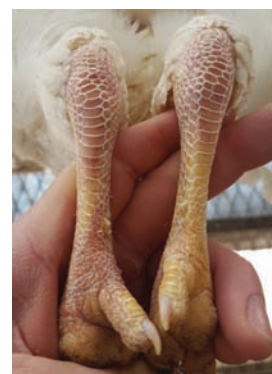
The incubation period of LPAIV infection is highly variable and can range between 3 and 14 days in naturally infected birds.



This variation in incubation period is dependent on many host, virus, and environmental factors including dose, route of infection, and species involved (11). Many LPAIV infections in chickens do not cause significant clinical signs and are only diagnosed through AI surveillance programs.

**Figure 4. Commercial layer with LPAI exhibiting facial swelling, swollen sinuses and nasal exudate.**

Primary clinical signs of LPAIV infection in chickens involve the respiratory and digestive tracts. Clinical signs can vary greatly, but often present as an acute onset of respiratory disease in susceptible populations. Coughing, sneezing, respiratory rales, and facial swelling are frequently observed. Exudate from sinuses may be evident around the eyes and nares, and the infraorbital sinuses are commonly

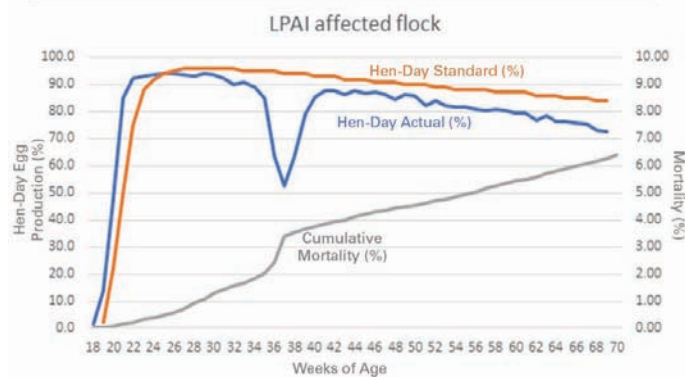


**Figure 5. Commercial layer with LPAI exhibiting subcutaneous hemorrhage of the legs and feet.**



swollen (Figure 4). The digestive tract may be affected, but usually to a lesser extent than the respiratory tract and typically presents as diarrhea. Subcutaneous hemorrhages of the feet and legs may occur as well (Figure 5).

Affected flocks become quiet and appear listless. Naturally, decreased feed and water consumption are the earliest signs of disease, followed by upper respiratory signs and decreased egg production for laying flocks. Egg production and eggshell quality can decrease dramatically, and loss of shell pigmentation can occur in brown or tinted eggs.



**Figure 6.** Egg production and mortality in a laying flock infected with LPAIV. The drop in egg production and mortality is highly variable depending on the strain of LPAI, immune status of the flock and the presence of other secondary pathogens.

LPAIV usually causes acute, mild to moderate disease with a pattern of high morbidity and low mortality. Typically, mortality does not exceed 5%, but high mortality has been reported in some LPAI outbreaks (5). Complications from concurrent infections, like *E. coli* or other respiratory pathogens, are common and can result in higher mortality. Mortality is generally higher in young growing birds than in laying chickens; however, this is not always the case.

#### NECROPSY LESIONS

Most of the pathology occurs in the respiratory, digestive, and reproductive tissues. The mucosal lining of the oropharyngeal area, sinuses, and trachea may appear inflamed and edematous with occasional hemorrhages. A serous to mucoid exudate may be present. Tracheal exudates can form plugs that occlude airways, resulting in suffocation. Pneumonia and air sacculitis may occur, especially when complicating secondary pathogens are present. Petechial hemorrhages surrounding the glands of the proventriculus is a common necropsy finding in layers (Figures 7–9)(11).

Some LPAIV strains are capable of systemic spread to other tissues and as a result, egg yolk peritonitis

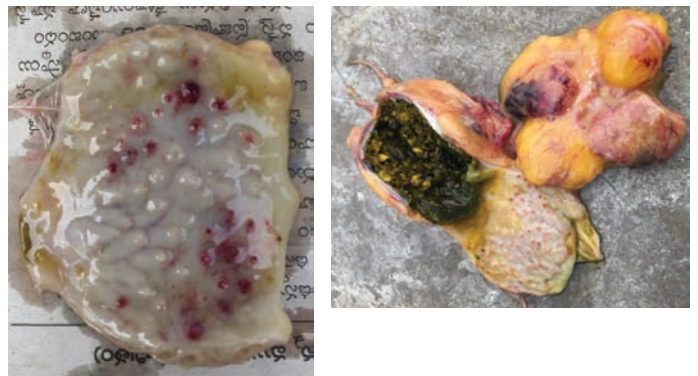
is a prominent finding with some LPAIV infections (Figure 7). The oviduct might contain inflammatory exudates, with the infundibulum, magnum, and uterus the most affected areas. Later in the disease progression, complete regression of the ovary and oviduct with cessation of egg production is possible. Some LPAIVs spread systemically to the kidneys, resulting in swollen kidneys (nephritis) with accumulation of urates that result in visceral gout. Less frequently, involvement of the acinar cells of the pancreas will result in a “firming” of the gland.

#### HISTOPATHOLOGY

Acute lymphocytic to heterophilic inflammatory reaction occurs in the affected tissues of the respiratory, digestive, and reproductive tracts. The histopathologic findings are not specific to LPAIV, but constitute supportive evidence when combined with the clinical picture and laboratory findings.

#### DIFFERENTIAL DIAGNOSIS

LPAIV causes acute respiratory disease and egg production drops like other respiratory pathogens of chickens. Differential diagnoses for LPAIV include infectious bronchitis, Newcastle disease, infectious laryngotracheitis, fowl cholera, and mycoplasmosis. Mixed infections can occur, further complicating diagnosis.



**Figure 8.** Mucosal petechial hemorrhages surrounding proventricular glands from a commercial layer infected with LPAIV.

#### DIAGNOSIS

**Detection of viral antigen:** The real time Reverse Transcriptase Polymerase Chain Reaction (rRT-PCR) test is commonly used by laboratories because of its accuracy and short turnover time. Tracheal, oropharyngeal, and cloacal swabs are suitable samples for rRT-PCR testing for a matrix protein common to all type A influenza viruses. Positive samples may be further tested by H5, H7 specific PCR tests.

**Detection of viral antibodies:** Tests detecting serum antibodies against AIV have been developed and are widely used as screening tests in AI surveillance programs. Antibodies typically appear in infected chickens 5–10 days post-infection. The agar gel immunodiffusion test (AGID), enzyme-linked immunosorbent assay (ELISA), hemagglutination inhibition (HI) tests have been developed for determining antibody titers. ELISA is generally more sensitive than AGID or HI tests but with more false positive results.



**Figure 7.** Petechial hemorrhages occurring in the epicardial fat of the heart from a commercial layer infected with LPAIV.



**Figure 10. Acutely affected hens demonstrating malaise, depression and lethargy.**

**Isolation of virus.** Virus isolation is the definitive test for AIV. Cloacal, oropharyngeal, or tissue swabs from infected birds are inoculated into embryonated eggs at day 9–11 of incubation. After 72 hours, the allantoic fluid is tested for hemagglutinating activity using chicken red blood cells. If hemagglutinating activity is found and determined not to be Newcastle disease virus, which also has hemagglutinating activity, then isolation of an AIV is presumed. Further identification of the HA and NA subtype is performed using subtype-specific antisera. Final identification of an AIV is done at an official government laboratory.

#### INTERVENTION STRATEGIES

**Effective biosecurity programs** prevent contact of poultry with wild aquatic birds, their excretions, and other materials that could contain viral particles. Routine biosecurity measures must be effective enough to prevent an outbreak and contain an outbreak should it occur. Every poultry operation is different and should develop a biosecurity plan that identifies its vulnerabilities for virus introduction and puts into place programs that mitigate these risks.

**Movement of birds, people, equipment, feed and materials** coming onto a poultry facility must be strictly controlled. Commercial poultry becomes infected by contact with contaminated people, feed or equipment entering the farm. Restrict access to only those people essential to the farm's operation with a change into farm dedicated footwear, clothing and hairnets. Deliveries of

feed and materials should be controlled. The vehicles used on farms should be dedicated for use only on the farm. The movement and marketing of old hens must be strictly controlled. On-farm sales of eggs and end-of-lay hens should not occur. The egg trays and bird crates used for product sales to traders should not be returned to the farm or should be fully cleaned and disinfected prior to return to the facility. Use caution and strict control plans when utilizing third-party contractors shared by commercial egg layer companies for vaccinations, moving old hens, pullets, and manure, as these services played a critical role in the spread of AI during the 2014-15 H5N2/H5N8 HPAI outbreak in the Midwestern United States.

**Outdoor housing of poultry** is an important risk factor and should be avoided during times of wild waterfowl migrations. Free range flocks should be immediately moved to and confined indoors when there are disease outbreaks in the area.

**Live bird markets** have been involved in several past influenza outbreaks. Live bird markets are often unsanitary and not regulated. It is common that multiple bird species are in close proximity, increasing the possibility of genetic shift and spread of the virus. Limiting the number of bird species sold in a live market, depopulating birds that remain at the end of the day, and cleaning and disinfecting before the next trading day have mitigated some of the risks.

**Movement of manure and dead birds** pose a significant risk for spreading the virus. Flocks infected with LPAI shed high levels of infectious virus in tissues and manure. When workers and manure handling equipment move between farms, a complete cleaning and disinfection is required. Composting manure and dead birds for 10 days at 60°C (140°F) is an effective way to inactivate influenza virus (10).

**Rapid detection of AIV infections.** Flocks exhibiting clinical signs consistent with AI infections should be rapidly tested for AI. The diagnostic laboratory should monitor any suspicious cases of respiratory disease. Early detection of AI infected flocks and rapid implementation of intervention strategies to isolate these flocks can prevent further spread. Other poultry farms located near an AI outbreak should be monitored closely.

Eradication of the virus is accomplished by depopulation of infected flocks and isolation of other flocks within an established quarantine area around an outbreak. Flocks are released from quarantine after repeated testing with negative results. This requires strict biosecurity

**Table 1: Commercial Vector Influenza Vaccines**

Vaccine	Vector Used	Route of Administration	Age of Vaccination	Contraindications
vHVT-AI-H5	HVT (Marek's disease herpesvirus type 3)	Subcutaneous injection	Hatchery	Exposure to another HVT vaccine
vFP-AI-H5	Fowl poxvirus	Subcutaneous injection or wing web inoculation	Hatchery or one day post hatch	Previous exposure to fowl poxvirus (field challenge or vaccine)
vND-AI-H5	Newcastle virus	Spray or eyedrop	One day post hatch	Maternal antibodies to ND



programs, controlled movement of poultry and poultry products to market, and extensive surveillance testing. Eradication of virus has not been achievable in many countries due to the resources required. For many of these countries, the goal is to control AIV infections with vaccination programs and limit the economic impact of the disease.

## VACCINATION

Avian influenza vaccines have been shown to provide antibody protection against AIV infections. While vaccination does not prevent infection, properly vaccinated birds are protected from the mortality, respiratory disease, and egg production losses associated with AIV infection. Vaccinated birds are more resistant to infection, with less shedding and transmission of infected virus after a field challenge.

The bird's immune system responds to vaccination by producing protective antibodies. The HA subtype of the vaccine is the most important viral antigen in the immune response to vaccination, and so the immunity produced from vaccination is HA subtype-specific. For example, H9 influenza vaccine provides protection against H9 field viruses, but does not protect against the other HA subtypes, such as H3 or H7. For this reason, the AI vaccine selection needs to be antigen-matched to field strains identified from regional disease outbreaks, where the HA subtype of the field strain is known. Subtypes H5 and H7 are commonly utilized because of their increased propensity to become highly pathogenic viruses.

Check local regulations before using AI vaccines. AI vaccination is often under regulation and usually not permitted in countries using a "stamping out" control program.

**Inactivated vaccines** are the most commonly used AI vaccines. Inactivated vaccines have been developed using H5, H7, H9, and other LPAIV strains taken from field outbreaks. Inactivated vaccines have been effectively used to reduce and, in some cases, eliminate AIV infections in a region. Inactivated vaccines are injected subcutaneously, usually given 2–3 times during the rearing period.

**Live recombinant AI vaccines.** Live recombinant H5 vaccines have been developed using Herpesvirus of turkeys (rHVT-AIV-H5), fowl poxvirus (vFPV-AIV-H5), or Newcastle disease viruses (vND-AIV-H5) as vectors. Vector vaccines are administered in the hatchery or at one day of age. It is common that vFPV-AI-H5 and vND-AI-H5 are given as a priming vaccination, followed by revaccination with an inactivated AI vaccine. Vectored AI-H5 vaccines provide protection against infection, clinical signs, and mortality caused by H5 field viruses; however, previous exposure to fowl poxvirus interferes with the efficacy of vFPV-AI-H5 vaccines. Similarly, chicks vaccinated with vHVT-AI-H5 vaccine should not receive another vaccine containing HVT. The presence of ND maternal antibodies can interfere with vND-AI-H5 vaccination.

## ZOONOSIS

Avian influenza viruses rarely infect people. The most frequently identified subtypes of avian influenza virus that have caused human infections are H5, H7, and H9 viruses.

The most notable is the HPAI H5N1 virus, which emerged from live bird markets in southern China. Workers in these live

markets and others near the infected poultry became infected. Transmissibility of H5N1 from infected birds to humans was low, and there was little evidence of human-to-human spread. Human infections of H5N1 virus have been reported in 16 countries in Asia and the Middle East (3).

Transmission from humans to birds is also a rare occurrence, seen primarily in turkey flocks (H1N1). Human vaccination for seasonal flu may provide added biosecurity to protect poultry flocks from infection with influenza.

## SUMMARY

Avian influenza poses a global threat to egg production facilities, necessitating robust biosecurity programs and diagnostic resources to prevent introduction and possible spread in multi-age complexes or to other sectors of the poultry industry. Most developed countries have created strategic AIV surveillance programs to ensure rapid response in the face of an outbreak, to monitor circulating virus strains, and to ensure trade of product free of avian influenza.

## REFERENCES

1. A Bird's Eye View on Flyways, A Brief Tour by the Convention on Conservation of Migratory Animal Species, Second edition, 2012. United Nations Environment Programme (UNEP)/Convention on Migratory Species (CMS).
2. Abolnik, C., Strydom, C., Rauff, D. L., Barend, D., Wandrag, R. and Petty, D. Continuing evolution of H6N2 influenza a virus in South African chickens and the implications for diagnosis and control. 2019. BMC Vet Res 15, 455. <https://doi.org/10.1186/s12917-019-2210-4>
3. Centers for Disease Control and Prevention, National Center for Immunization and Respiratory Diseases (NCIRD), <https://www.cdc.gov/flu/avianflu/influenza-a-virus-subtypes.htm>
4. Chatziprodromidou I. P., M. Arvanitidou, Guitian J., Apostolou T., Vantarakis T., 2018. Chatziprodromidou et al. Systematic Reviews 7:17, DOI 10.1186/s13643-018-0691-z
5. J. J. de Wit, G.D. Deventer, T. H. F. Fabri, R. J. Molenaar, R. Dijkman, N. de Bruijn and R. Bouwstra. Major difference in clinical outcome and replication of a H3N1 avian influenza strain in young pullets and adult layers. Avian Pathology Volume 49 (3), 2020, p. 286-295
6. Kali, Si, A.K. Skidmore, T. Wang, W.F. de Boer, P. Debba, A.G. Toxopeus, L. Li, and H.T. Prins. 2009. Spatio-temporal dynamics of global H5N1 outbreaks match bird migration patterns. Geospatial Health 4(1), pp. 65–78.
7. National Disease Control Centre Avian Influenza Alert, Number 08 of 2020. <https://www.agriculture.gov.ie/media/migration/animalhealthwelfare/diseasecontrols/avianinfluenzabirdflu/news/2020/1AIUpdateNo8of202020420.pdf>
8. OIE, Manual of diagnostic tests and vaccines for terrestrial animals, Chapter 2.1.14 – highly pathogenic avian influenza.
9. Peacock, T., James, J., Sealy, J. E., & Iqbal, M. (2019). A Global Perspective on H9N2 Avian Influenza Virus. Viruses, 11(7), 620. <https://doi.org/10.3390/v11070620>
10. Senne, D.A., B. Panigrahy, and R.L. Morgan. 1994. Effect of composting poultry carcasses on survival of exotic avian viruses: highly pathogenic avian influenza (HPAI) virus and adenovirus of egg drop syndrome – Avian Disease. 38:733-737.
11. Swayne, D.E, Suarez, D.L, & Sims, L.D. (2020). Influenza. Diseases of poultry, 210-256.

-- Courtesy Hy-Line International

# Big problem – simple solution

Dr Marleen Boerjan

## Highlight Points

"On Marleen Boerjan's arrival, the fact that the hatchery had a serious problem revealed itself by the deafening noise coming from the chick boxes being loaded into a truck. Fortunately, the problem turned out to have a simple operational solution."

Good quality day-old-chicks need to be kept comfortable after hatching. Especially after spray vaccination they are prone to chilling, which will cause an increase in first week mortality. Listen and look to your chicks all the time; they will alert you when they are not comfortable!

A Hatchery got in touch with me recently about a worrying problem: 3-5% of the newly delivered chicks were dying during their first 3-5 days on the farm. As I arrived on site, chick boxes were being loaded onto a truck and even before entering the hatchery the noise was deafening.

The Hatchery manager showed me around the hatchery, which was well organised and clean; the routing to the processing room was straightforward and logical. I noticed, however, that most of the doors were open, whereas I would have expected them to be closed. The chick-processing room was separated from the room where chicks were counted, boxed and spray vaccinated.

I stayed a while in the chick-processing room, observing the chicken take-off and selection. The smell was fresh, the chicks looked good and they were quiet. I also noticed that the shells were clean – an indication that pulling time was correct.

The first-class, saleable chicks that had been selected were placed on a conveyor belt, which moved the chicks through to the next room, where they were counted, and spray vaccinated.

After leaving the processing room, where the conditions (temperature and humidity) felt comfortable, entering the 'boxing' room was a shock. My immediate reaction was 'something is wrong here'. First, there was the overwhelming noise made by the chicks in the transport boxes stacked on the trolley, waiting to be transferred to the holding room next door. On closer inspection I could see that these recently vaccinated chicks were soaking wet, all huddled together, and their feet felt really cold. To make matters worse, the trolley was standing directly in a cold draught, caused by a big fan in the corner of the vaccination room. And in the holding room, the temperature was also too low for the chickens that were still wet from vaccination. No wonder the chicks were not happy and were making so much noise!

It didn't take me long to work out what was wrong in this hatchery. The high levels of early mortality during their first week on the farm were due to the vaccination spray being too heavy, and the wet and under-cooled chicks then being



exposed to cold draughts from fans and open doors.

Fortunately, the hatchery technician realised the vaccination error himself, saying: "It will only take me a few minutes to change the nozzle for one with a finer spray". He also reduced the fluid pressure – so that the droplets wouldn't be too fine and to reduce the amount of water sprayed per chick box. Now the chicks were just damp after spraying instead of being soaking wet.

In the quiet of the canteen we evaluated the early mortality issue. The hatchery manager concluded that early mortality had become a serious problem after the recent annual check of the vaccination equipment – when the spraying nozzles had been exchanged, but not checked afterwards. Since the check, nobody had noticed that the chicks were soaking wet and their body temperature had dropped too low. Despite the noisy protests by the chicks, the dramatic change in viability had come as a surprise.

The hatchery manager realised that everyone had been so busy following protocols as accurately and efficiently as possibly that they had forgotten the other golden rule: look, smell and listen. Take immediate action if you see, smell or hear something abnormal.

A week later I received a short message and a picture of happy chicks on the farm: 'problem solved', it said.

# Seven Questions to Inform Antimicrobial Reduction Efforts in Agriculture

Barbara Brutsaert

Global Programme Manager – Gut Health

From guarding against African Swine outbreaks on farms to protecting against COVID-19 outbreaks in meat packing plants, biosecurity and sanitation measures have recently been in the spotlight. Yet a long-running health concern for livestock producers continues to pose a threat to animal performance, producer economics and ultimately human health - antimicrobial resistance.

The risk posed by rising rates of antimicrobial resistance is prompting legislative bodies around the globe to enact restrictions on the use of antibiotics for non-therapeutic purposes. The 2020 World Antimicrobial Resistance Virtual Congress in Washington D.C. devoted two days to the subject of AMR. The severity of the AMR threat is made clear by a UN Adhoc Interagency Coordinating Group on Antimicrobial Resistance report warning that drug-resistant diseases could cause 10 million deaths by 2050.

Despite the grim numbers, encouraging progress is being made when it comes to livestock production. Governments such as the Netherlands have worked with commercial farmers to achieve dramatic reductions in antimicrobial use while maintaining productivity and economics. Understanding the issues at stake is an important first step in meeting the challenge. Seven frequently asked questions help frame the challenge as leaders seek to meet rising demand for protein production while protecting animal health and producer economics.

## 1. What is antimicrobial resistance (AMR)?

Antimicrobial resistance (AMR) refers to how bacteria exposed to antimicrobials adapt. Through repeated exposure, various bacteria evolve and may become resistant to traditional tools used to treat illness in both humans and animals. Bacteria may develop resistance to one or multiple antibiotic classes. As physicians have fewer tools for treating bacteria due to higher resistance rates, it is possible that a person could die from a simple infection, such as a urinary tract infection. While bacteria may develop resistance to an antimicrobial agent naturally, such resistance tends to be encouraged in the presence of antimicrobials. Bacteria contagion may spread between people and animals directly or through the environment and from person to person. Some resistance genes are located on plasmids, mobile genetic elements, and can transfer across bacterial species – for example, from *E. coli* to *Salmonella* bacteria.)

## 2. Is there a connection between antibiotic use in livestock production and human levels of AMR?

Evidence reveals a correlation between lower antibiotic levels used in food-producing animals and a reduction of AMR bacteria in these animals. This evidence also holds true

for humans in direct contact with animals, such as farmers. Limited data prohibits extrapolating solid conclusions, but research into the mechanisms of AMR suggest AMR bacteria may spread from animals to their environment and to humans. Such insights led the World Health Organization (WHO) in 2017 to recommend farmers stop using antimicrobials for growth promotion purposes and prevention of disease not clinically diagnosed.

## 3. How can interventions not important in human medicine – such as ionophores – be used to control coccidiosis?

Though they are classified as antibiotics, ionophores are typically not used in human medicine. They are often addressed separately with regards to reducing antimicrobial use in poultry production. This practice alludes to the economic significance and animal welfare implications coccidiosis presents, both as a specific condition and as a predisposing factor for other challenges such as necrotic enteritis. Vaccinating birds with virulent or attenuated live strains of coccidia is increasing becoming an alternative to ionophores in many regions of the world. But vaccines are not foolproof as vaccination is more complex and prone to management mistakes. This complexity helps explain to some extent the variations seen in vaccine effectiveness. In addition, vaccination tends to be more expensive than anti-coccidial approaches for treatment of coccidiosis. This depends on the type of vaccine registered (virulent or attenuated live strains) as well as the degree of necrotic enteritis that is otherwise, as a side effect, managed with ionophores.

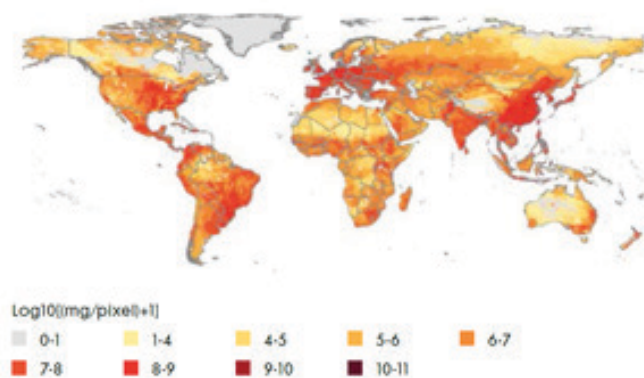
Ionophores are deemed not important in human health care. As such, resistance against ionophores is not relevant to human health. This observation raises the question as to why the U.S. FDA, for example, includes ionophores in its definition of antibiotics used in livestock production. It is important to note that ionophores are by definition, antibiotics. In addition to their effect on coccidia, ionophores also exert an effect on *Clostridium* bacteria. Then there is the issue of consumer trust to take into account. The practice of not labeling ionophores as antibiotics could potentially lead to consumer confusion and undermine trust in programs such as “raised without antibiotics” or “no antibiotics ever”. Lastly, it cannot be ruled out that resistance to ionophores could induce cross-resistance to interventions used in human health care –although there is no substantiating proof and this occurrence is deemed highly unlikely.

## 4. As some regions restricted antimicrobials in agriculture more than a decade ago, how widespread is the practice of antibiotic use in poultry production?

There is little global quantitative data on antibiotic use in



livestock to inform estimates. Statistical models have been built by Van Boeckel et al. (2015) based on livestock densities, projection of market demand for meat and estimates of antimicrobial consumption in high-income countries to model global use of antibiotics. These models looked at patterns for 2010 and 2030 across various species. Looking at 2010, the models estimated the global average annual consumption of antimicrobials per kilogram of animal was 45 mg/kg, 148 mg/kg and 172 mg/kg for cattle, chicken and pigs, respectively (Figure 1).

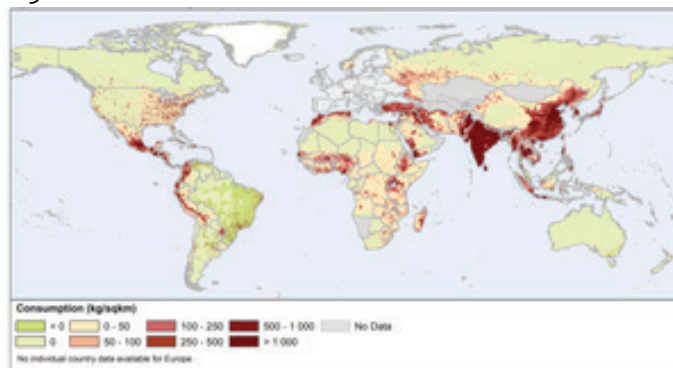


**Figure 1. Global antimicrobial consumption in livestock in milligrams per 10 km². Source: Van Boeckel et al., 2015**

Global trends in antimicrobial use in food animals. Van Boeckel et al. PNAS May 5, 2015. 112 (18) 5649-5654; <https://doi.org/10.1073/pnas.1503141112>

### 5. Looking to the future, how much is antimicrobial use in livestock production projected to grow?

Looking at global food production, consumption of antimicrobials is projected to increase 67% by 2030 compared to 2010 levels. Asia is a key region and the continent is projected to reach 51,851 tons by 2030, representing 82% of global antimicrobial consumption in 2010. More dramatic increases in antimicrobial consumption in some regions compared to others can largely be attributed to a shift toward more intensive production systems as well as more demand for animal protein caused by rising population and income growth in these regions. Figure 2 depicts projected increased growth in demand for poultry meat from 2000 to 2030.



**Figure 2. Growth in demand for poultry meat from 2000 to 2030 (in '000 MT). Source: FAO 2011**

Source: Food and Agriculture Organization of the United Nations, 2011 T.P. Robinson & F. Pozzi, Mapping supply and demand for animal-source foods to 2030

Legislation supporting antibiotic-reduction initiatives is being proposed and enacted by governments around the globe. The European Union (EU) has emerged as a leader in efforts to reduce antibiotics. For example, in the Netherlands, antibiotic susceptibility testing is mandatory when prescribing third choice, critically important antibiotics. The EU is taking steps to prohibit prophylactic group treatment of animals. And the U.S. Veterinary Feed Directive enacted in 2017 requires that a veterinarian authorize the purchase of medically important antimicrobials. In 2016, China banned the use of colistin as a feed additive and initiated legislative actions to reduce antibiotic use in general and ban in-feed antibiotics by 2020. Other Asian regions are also getting on board. Indonesia and Vietnam banned antibiotics for the purpose of growth promotion starting in 2018. These are just a few examples that demonstrate how attention on addressing the AMR threat is growing. The private sector is also advancing the movement away from antimicrobials. Leading restaurant chains and food brands in the U.S., for example, have introduced varied production schemes ranging from responsible use antibiotic use to antibiotic-free production.

### 6. As producers reduce use of antimicrobials, will animal health and producer profitability be negatively impacted?

Lowering the use of antimicrobials should compromise neither the health nor the welfare of animals. The industry should focus on first reducing the need for antibiotics, with the rationale that healthy animals will not require treatment with antibiotics. Viewed through this lens, it is important to understand that antibiotic overuse will lead to subsequent resistance. In turn, this will not only impact human health care, but will restrict treatment options for animals. By limiting use of antimicrobials, poultry producers can help maintain the efficacy of these important interventions, protecting the health of animals and humans.

Ultimately, no silver bullet replacement for antimicrobials exists today. Management practices that are sometimes covered up by antimicrobials need to be addressed and remedied. Such management mistakes are sometimes revealed when animal health and performance improve after the reduction or removal of antimicrobials. Of course, it is more complex to remove antimicrobials completely, especially when ionophores are included in the definition of “antibiotic-free” interventions. Trouw Nutrition’s experience working with integrators who are leaders in antibiotic reduction have demonstrated it is possible to produce broilers without antibiotics (including ionophores) and realize comparable and even improved health and performance, along with greatly improved profitability.

### 7. What steps should producers in their efforts to reduce or even eliminate antimicrobials from production practices?

As noted above, there is a strong need to reduce antimicrobials if we are to protect human and animal health. But beyond addressing the risks and preserving the efficacy of antibiotics to treat humans and animals, reducing antimicrobial use can also add value to the end product and improve producers’ bottom lines. Success demands an integrated approach and producers must commit to reviewing feed formulation, water management quality, farm practices and health

management. Feed and water additives deliver important support in antibiotic reduction programmes. However, these interventions require other best practices be implemented across the production chain. These practices begin in the breeder flock, continue to the hatchery and extend onto the broiler farm. The approach also involves the feed mill and its production processes and raw material management. Trouw Nutrition's feed-farm-health programme includes detailed analyses of critical control points across the entire poultry production chain. Analysis of each component in the chain

can inform a tailor-made solution designed to address each producer's situation. While no one-size-fits-all model exists, an integrated, custom approach curated to the production environment can help achieve production goals while reducing or even eliminating antimicrobial use in poultry production. This integrated approach underlies Trouw Nutrition's commitment to help customers reduce the need for antibiotics while maintaining profitability.

*References available upon request. For further information, please contact us at [customercareindia@trouwnutrition.com](mailto:customercareindia@trouwnutrition.com)*

## Animal welfare and the implications of stress on the immune system and production

Minervet S. A

**Animal welfare is defined as the state of mental and physical health that allows the animal to remain in perfect harmony with the surrounding environment.** The loss of welfare involves a series of problems that will affect the **function and performance of the production system**, as well as its economic results. Today, both internationally and increasingly on an individual basis in each country, regulatory and normative frameworks have been established to ensure appropriate and standardized practices to provide a certain state of well-being to **food-producing animals**.

Animal welfare is not just another requirement imposed by markets, but a tool within the value chains, which aims to promote product quality and safety. It must be taken care of in a comprehensive way throughout the livestock chain, in such a way as to minimize problems, safeguard investment and promote the sustainable development of each activity, while also meeting the demand of the general public and consumers for products of animal origin.

The use of animals in agricultural activities contributes directly to human well-being and leads to improvements in productivity and economic benefits. There is a relationship between **animal welfare and the safety of food produced from them, since a stressed animal is more susceptible to diseases and disorders**, which may be present to a greater or lesser extent in the products derived from it. Stress is only a response generated when the animal fails to adapt to situations that cause anxiety or fear. This may not only bring about changes in behavior but also physiological and metabolic disturbances, which can lead to pathological problems and sub-optimal zootechnical performance.

In the specific case of pigs, a species very sensitive to stress, it has been demonstrated that a lack of well-being has the following consequences on production:

- Decrease in growth rate;
- Increase in the age at which the first heat appears in females;

- Decrease in the percentage of pregnancies on the farm;
- Increase in perinatal mortality rate;
- Up to 23% variation in reproductive output;
- Up to 29-36% variation in total number of piglets born;
- Reduced effectiveness of response to vaccination and increased sensitivity to respiratory diseases.
- In the case of poultry, it has been observed that stress has a direct impact on production rates and health conditions:
- Up to 28% variation in the rate of conversion into broilers;
- Up to 28% variation in egg production yield;
- Increased sensitivity to pathogens such as *coli*, *Salmonella*, *Clostridium* and respiratory diseases;
- Reduced effectiveness of response to vaccination.



**Stressors may be grouped into four large categories: management, facilities, climate and movement of animals.**

Thus, the excessive concentration of animals, the presence of noise or pollution, a sudden variation in temperature, changes in feeding, and loading and unloading operations are the most relevant factors that produce the effects highlighted above. When stressful situations continue

over time, in addition to their synergistic effect, they **cause behavioral, digestive and reproductive disorders, and even inhibition of the immune system** with a greater likelihood of disease. It has also been observed that increased stress leads to less effective drug action, increasing their toxic potential.

The hypothalamic-pituitary-adrenal axis regulates the immune system by releasing glucocorticoids, as the cells of this system possess a number of receptors for these hormones. In this way, they modulate the inflammatory response, cytokine expression and adhesion molecules, and block lymphocyte maturation, among other effects. The immune system is a complex system of organs, tissues and cells that can be classified in two levels. The “innate immune system” includes physical and chemical barriers that act as a first line of defense against disease-causing agents. These include epithelial surfaces, phagocytes, antigen presenting cells (macrophages, neutrophils/heterophils and dendritic cells), natural killer cells, cytokines and complement proteins. The “adaptive immune system” is mediated by “B2” and “T” lymphocytes. It is not effective in protecting against pathogens at initial exposure, but is highly effective at subsequent exposures and also when pathogen challenges are successful for at least a week (re-infections or infections following vaccination). Glucocorticoids are the main hormones linked to stressful situations and are capable of affecting the immune system at both levels.

In recent times, **the use of products with beneficial effects on intestinal health and immunity has increased as a strategy.** Every day breeders, nutritionists and veterinarians have more evidence that better intestinal health and immunity increase productivity. A well-established fact is that the gastrointestinal tract is one of the major lymphoid centers in the body. Seventy percent of the immune response is located there, especially in poultry. For this reason, focusing on the concept of intestinal health and its direct relationship with the efficiency of the immune system, **plant extracts have taken center stage in the field of animal nutrition in the search for immunomodulatory solutions in stressful situations during breeding.**

Animals confined to intensive production systems are constrained to maintaining a balanced diet, but with limited access to **nutraceuticals** that could be naturally obtained from the consumption of a relative variety of plants. **These micronutrients play a role in regulating or stimulating different physiological responses, some focused on modulating the immune system.** The main mechanism of action is that nutraceuticals act as markers that induce gene expression and protein synthesis by ribosomes in certain groups of cells. These steps represent necessary and irreplaceable instances for the immune system to respond to pathogens and diseases.

Based on these principles, MINERVET S.A. has developed **MINER I, a product that contains botanical extracts. It is indicated as an effective immunomodulatory functional additive for all species and productive categories.** MINER I has an effect on the innate and acquired immune system, as it promotes greater lymphoblast differentiation, stimulates the action of macrophages in the intestine,

improves the response in antibody synthesis and optimizes the action of signaling agents (cytokines) involved in the inflammatory response.

As mentioned above, MINER I is an additive that can complement the diet and accompany the animal through situations of physiological stress during breeding that affect its immune system. It can be administered during the entire production cycle without producing toxicity or chemical residues in the final products of the value chain. It confers greater resistance to infection in young animals, which have a less developed immune system. It allows a better response to vaccination, promoting higher antibody titers. Furthermore, it provides an adequate response to infectious processes and during therapeutic treatment. The fact that an animal has the resources to modulate and regulate a balanced response to pathogens and diseases allows a greater gain in production rates, compared to those that require a great effort to cope with these processes, where an exacerbated or ineffective response is expressed to the detriment of production parameters. During vigorous immune responses, the immune system can use up to 10% of all nutrients supplied. This is why it is important to have a balanced immune response, rather than an overstimulated one. MINER I can also be used at times when drug withdrawal is required, e.g. in pre-slaughter instances, as it promotes greater resistance and strengthens the immune system.

It has been studied that supplementation with **MINER I has conferred better response in vaccination against diseases such as Gumboro, Newcastle and infectious bronchitis in poultry.** Even groups of animals challenged with *E. Coli* have shown better production rates and lower mortality rates compared to antibiotic therapy. On the other hand, it has been observed that pigs consuming rations enriched with MINER I have shown higher amounts of total immunoglobulins compared to those that did not receive the benefit, which provides greater protection and resistance to stress and infectious processes.

All actions that promote quality feeding, stress reduction and optimization of the functioning of the various systems and organs are taken as contributions to improving animal welfare. A production system that guarantees this will have an optimized, predictable and assured performance.

## CONCLUSION

Animal welfare and related health status has a significant economic impact on productive units. Factors contributing to disease must be taken into account in order to ensure the well-being of animals and avoid further economic losses. Stress is the main effect produced by the lack of animal welfare and one of the breeder's greatest enemies by weakening the immune system of his animals. Granting an optimum health status by administering a balanced diet contributes to animal welfare. A strengthened immune system helps to cope with stressful situations and respond efficiently to infectious and pathological processes. Being able to provide the animal with the best conditions for its well-being, including favoring its intestinal health and an enriched, balanced and complete diet, allows the production system to maintain an optimized, predictable and assured performance.



# Preparation of Bird for Poultry show

Himanshu Mehta

B. V. Sc & A.H., M. V. Sc (Animal Genetics and Breeding)



## Highlight Points

The main objective of this article - To provide knowledge about the preparation of birds for exhibitions in a poultry show. ► Role of poultry shows in the progress of the poultry industry. ► Precautions to be taken while preparation of birds for a poultry show. ► Defects of birds that lead to the disqualification of birds in a poultry show. ► Conclusion of this article in this COVID-19 PERIOD.

The main objective of a poultry show is to aware farmers about breed specific characters of a poultry bird. It creates a sense of completion among different poultry breeders and poultry rearing farmers to excel in the competition by continuous improvement in their birds. Poultry show is the easiest way to attract new people towards poultry industry. It is the mean of educating future vets about the breed specific characters. In developed countries these poultry shows are organized by breed specific clubs but in India such specialized associations are lacking and yet to come up. In India mostly poultry shows are organized as part of livestock show but now a days with development and commercialization of poultry industry many private individual poultry fairs and summits are organized by poultry organizations. This provide farmers a great opportunity to know about newer innovations in commercial poultry industry and new developed strains of poultry as well as market insight. So organization of poultry show plays very important role in the development of poultry industry.

All the exhibitions in a poultry show can be classified into two major classes: Show class and Utility class. In show class exhibition of birds, the main focus is on the characteristics of birds specific to their breed like plumage and body conformation. It involve traits that are true to its breed type standards set by government organizations. In utility class exhibition, production related traits like feed conversion ratio and total egg production etc. are taken into consideration. In India, no separate judging for show and production characteristics of poultry but both the traits are judged together. Usually American standards of perfection or the British standards of perfection for a breed are extensively followed during these poultry shows. While judging of egg type bird i.e. layer main emphasis is on both show and production traits like intensity and persistency of laying whereas meat type bird i.e. broiler are judged on the basis of body weight and conformation for maximum yield of meat. Male bird used for breeding purpose are judged on basis of breed specific characteristics, vitality and vigour of the bird.

### Preparation of the bird for show

Preparation of bird for poultry show is very essential so that bird can exhibit its characters fully to the judge and can obtain maximum marks in the poultry show. It's important to

keep the birds looking healthy and nice so that public can see birds are being well cared. To prepare a bird for poultry show these steps should be followed:

### Training for show

Training of the bird before poultry show is very necessary. It helps to show full worth of the bird to the judge. It helps to prevent the nervousness of the bird during the process of judging in a poultry show. The training of the bird should be started 4 to 5 days before the day of poultry show. Bird should be trained in the show-pen in conditions similar to the poultry show. Each bird should be kept separate in its own show-pen. Bird should be placed in a show-pen carefully by placing its head first in the pen without any struggle in the evening. Bird should be kept alone in the night and by next morning it should be served with normal feed and water. Then on 2<sup>nd</sup> day bird should be given its favorite feed and trained with judging stick to move around and assume a posture appropriate to its breed. Then again bird should be provided with its favorite feed which gives a conditioning effect to the bird that with its good performance in the show it can get its reward.

### Special feeding

Bird preparing for poultry show should be provided with special diet having about 16 percent of protein in it. This protein helps in proper growth of the bird. There should not be sudden change in the diet of the bird. The feed should be changed gradually as sudden change disturbs the microflora of the gut of the bird and can result in deterioration of health of the bird. A good diet with sufficient quantity of minerals and vitamins that can keep the bird in most fit form for poultry show should be given.

### Preparation of plumage

Bird's all body feathers are called as plumage. Plumage appearance plays important role in perception of health of the bird. Bird's plumage should be continuous and free from damaged feathers giving a nicer look to the bird. Usually there is always one or two damaged feathers present in the plumage of a well condition birds. These one or two damaged feathers should be plucked carefully but large scale plucking of damaged feathers of a bird should not be practiced. Such practice is not allowed in any show as it hides the defects related to bird and act as covering-up for a defect or disqualification.

### Washing of bird

Washing of bird before poultry is important. It gives clean look to the bird by removing dirt adhered to its plumage and body especially in case of white colour plumage breed like leghorn. It improves the overall appearance of the bird. Before giving bath to the bird, it is important to remove dirt sticking to the shank, feet and head. For scales tooth pick should be used for removing dirt. After removal of the dirt shank and feet should be scrubbed gently with soap water without affecting the skin. After scrubbing feet and shank should be rinsed with clean water and some sweet oil should be applied on it.

For feathers one wash is sufficient 3 to 4 days before the poultry show. Great care should be taken while washing of the feather so that no damage of feathers and skin occurs. Bird should be washed by submerging it into the water tub by always keeping its head above the water level of the tub. Head of the bird should be out of water as submerging its head into the water cause blockage of respiration of bird resulting into death of the bird. For efficient washing, 3 to 4 tubs of water should be used each having capacity of 20 to 25 litres of water. First bird should be washed with soap water then it should rinsed properly with clean water. The temperature of the water should not be too high or too low. It should be according to body temperature of the bird. At the end, for cleaning of bird any soft cloth or sponge should be used without causing damage to the plumage of the bird.

Coloured plumage bird should not be washed. Proper grooming is enough for coloured birds. In case of laying birds i.e. birds giving eggs should not be washed as it affects the laying due sudden change in the surrounding environment of the bird but male birds can be washed.

### Grooming of bird

Grooming give brighter appearance to the bird. Well-groomed plumage gives brilliance to the plumage of the bird. In case plumage is soiled then it should be allowed to dry and it should be removed gently with any fine brush. Proper poultry grooming brushes should be used for grooming of the bird. Plumage should be groomed in the natural flow of the feathers. Across and upward brushing of the feathers should be avoided. In white leghorn birds, grooming can increase the luster of the white colour plumage. While grooming loose feathers of bird plumage should be adjusted and old scales over shank area should be removed without causing any injury to the bird's shank and feet. After grooming and removing of older scales from shank area, small quantity of sweet oil should be applied over feet without touching the feathers of the bird. Excess oil should be removed with the help of any soft cloth.

### Defects leading to disqualification

As discussed earlier, in India birds are judged for both breed characteristics as well as production traits. The judging of bird in a poultry show is done on comparative basis in which best available bird in that poultry show is rewarded. The bird should have good general appearance, uniformity, vigour and health. The judge carefully examines the individual bird

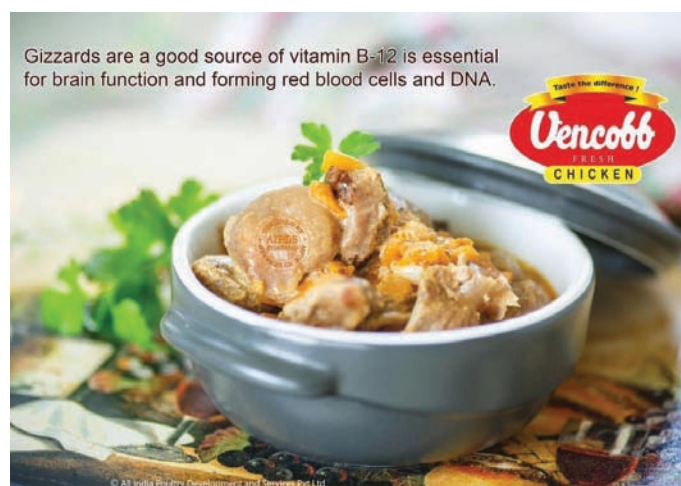
in respect to their breed, compare their good and bad points and look for any serious defects. Undersized body, too long or short legs, coarse comb or head and too high carried tail are some of the general defects found in birds which reduces the worth of bird in poultry show but don't leads to disqualification. Some of the serious defects that leads to disqualification of bird in a poultry show are following:

- Less weight than standard weight for a specific breed and disease or deformity can leads to disqualification of the bird.
- Wry tail, spilt tail, squirrel tail or absence of main tail feather etc. tail defects can leads to disqualification of the bird.
- Deformed beak, crooked or hunched back, split wings, slipped wings, chipped wing and twisted feathers cause disqualification of bird in a poultry show.
- Deviation of plumage colour in the coloured breed of poultry and defects of comb also cause disqualification of the bird.
- Leg defects like bowlegs, knock-knee or entire absence of spur in male birds are some of major defects that cause disqualification.

### Conclusion

Poultry shows are key extension activity to dissipate knowledge among poultry farmers. It attracts new people toward poultry farming as well as it encourages existing farmers for adoption of new techniques and new strains of poultry birds. It helps to exchange of new ideas between poultry breeders. Farmers should prepare their birds in scientific manner to show the real value of their bird. More and more farmers should be encourage to participate in these poultry shows which increase the completion among farmers and can excel the progress in the poultry industry which ultimately helps in increasing the farmers income through poultry farming. In this period of COVID-19, poultry fairs should be organized according to the government guidelines for COVID-19. Proper sanitation and social distancing norms should be followed in these poultry fairs.

*himanshumehta0309@gmail.com*



# Mycotoxin Prevalence in India

Provimi Animal Nutrition India Pvt Ltd

## Main Highlights of Mycotoxin Survey

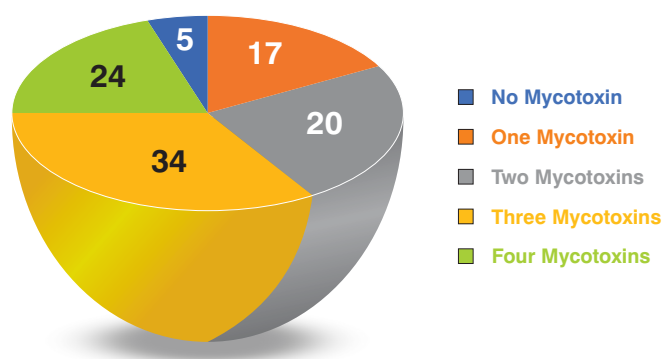
- 1705 samples have been collected for more than 3 years (May'2017 – June'2020) from 13 states.
- Mycotoxin risk matrix have been evaluated for four mycotoxins i.e. Aflatoxin, T2 Toxin, Ochratoxin & Fumonisin in six ingredients; soya bean meal, mustard deoiled cake, rice polish, corn, corn gluten meal, dried distilleries grain soluble, predominantly used in poultry diet.
- 78% samples were contaminated with more than one mycotoxin. Co contamination of various mycotoxin can amplify negative effects on animal performance.
- 20% samples were contaminated with two mycotoxins, 34% samples were contaminated with three mycotoxins and 24% samples were contaminated with four mycotoxins.
- Aflatoxin is majorly found mycotoxin in all ingredients, almost 41% samples were above tolerance limits for aflatoxin followed by T2 & Fumonisin, 29% and 25% respectively.
- Corn Gluten Meal is highly contaminated with all mycotoxins.
- DDGS is highly contaminated with aflatoxin & T2.
- MDOC & SBM are comparatively cleaner ingredients in terms of mycotoxin contamination.
- West Bengal comes under extreme risk zone, where more

than 76% samples were above tolerance level for at least one mycotoxin.

- Andhra Pradesh comes under severe risk zone, where 51% - 75% samples were above tolerance level at least for one mycotoxin.
- Rest of other 11 states come under high risk zone, where 26% - 51% samples were above tolerance level at least for one mycotoxin.

**Co-contamination of Mycotoxins is major risk for poultry, which amplify negative impact on poultry performance**

Co-Contamination of Mycotoxins (%)



88% samples were contaminated with more than one mycotoxin

24% samples were contaminated with four analysed mycotoxins

### DDGS

Aflatoxin	100%
Ochratoxin	97%
T2	90%
Fumonisin	44%

### CGM

Aflatoxin	99%
Ochratoxin	93%
T2	87%
Fumonisin	91%

### Corn

Aflatoxin	83%
Ochratoxin	55%
T2	77%
Fumonisin	54%

**Total Number of Samples :**  
1705

**Total Analysis :**  
5350

**Time Frame:**  
3 years 2 months  
(May'17 – Jun'20)

**Ingredients**  
18

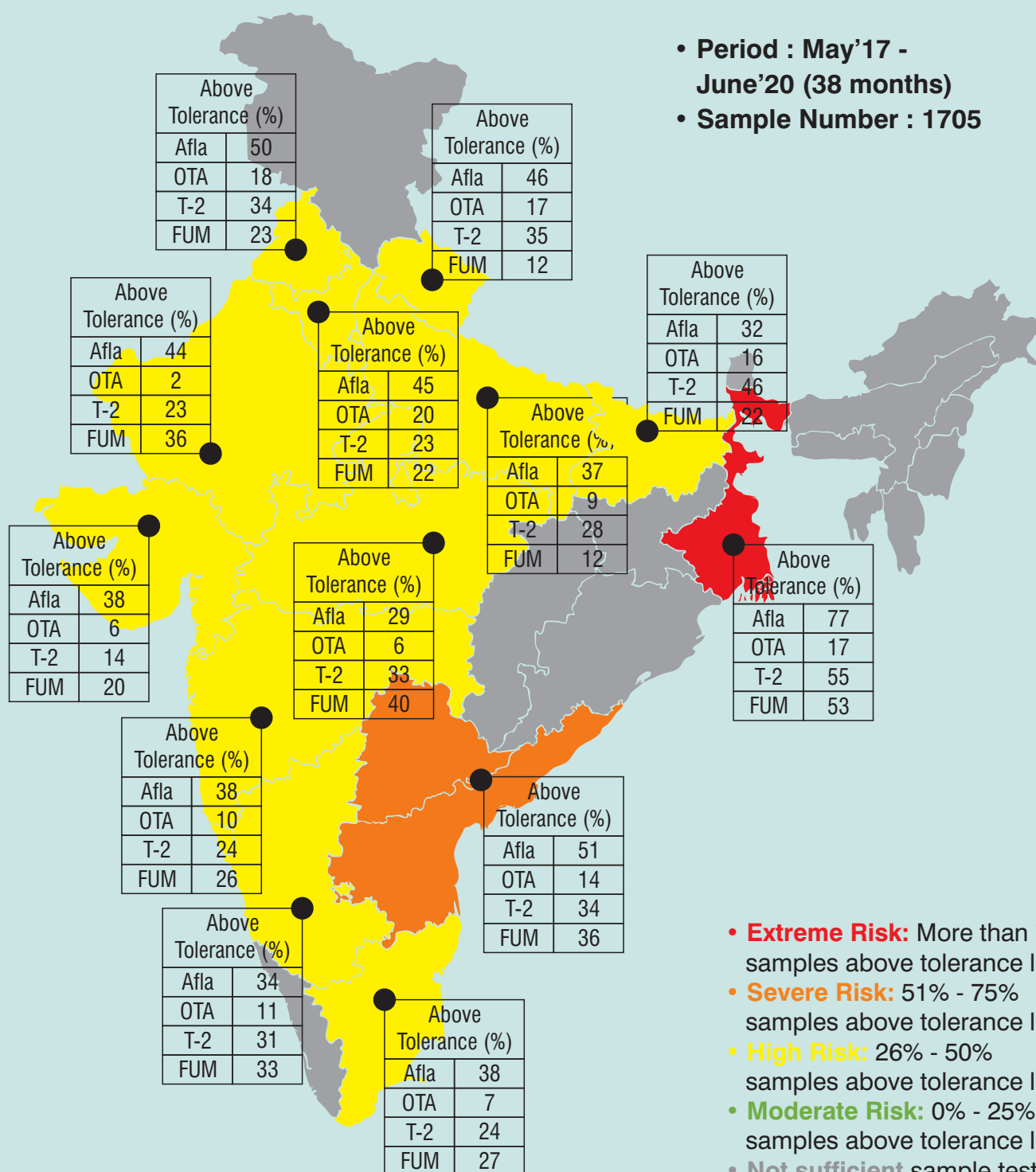
**States Covered :**  
13





## Mycotoxin Prevalence in India (State wise)

- Period : May'17 - June'20 (38 months)
- Sample Number : 1705



**Total Number  
of Samples :**  
1705

**Total  
Analysis :**  
5350

**Time Frame:**  
3 years 2 months  
(May'17 – Jun'20)

**Ingredients**  
18

**States  
Covered :**  
13

## Mycotoxin Prevalence in India (Ingredients wise)

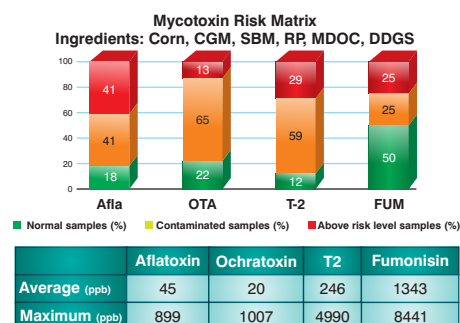
**Total Number  
of Samples :**  
1705

**Total  
Analysis :**  
5350

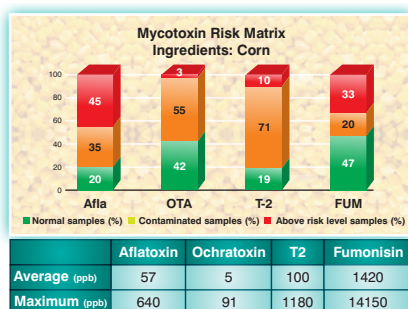
**Time Frame:**  
3 years 2 months  
(May'17 – Jun'20)

**Ingredients**  
18

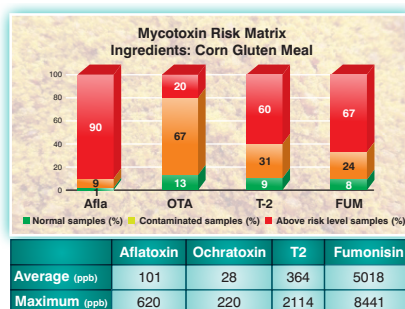
**States  
Covered :**  
13



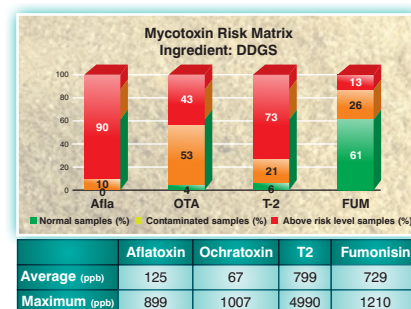
**Figure 1: All selected ingredients -**  
Percentage of normal samples, contaminated samples and above risk level samples for each mycotoxin



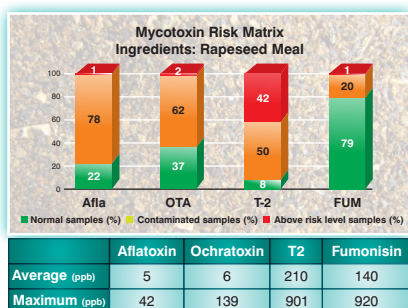
**Figure 2: Corn -** Percentage of normal samples, contaminated samples and above risk level samples for each mycotoxin



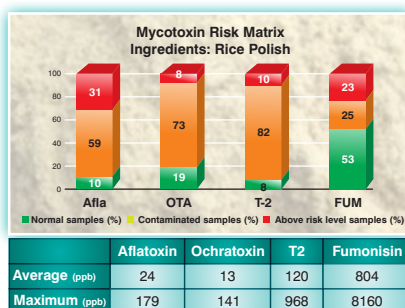
**Figure 3: Corn Gluten Meal (CGM) -** Percentage of normal samples, contaminated samples and above risk level samples for each mycotoxin



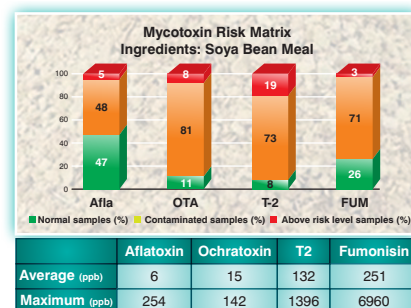
**Figure 4: Dried Distillers Grain Soluble (DDGS) -** Percentage of normal samples, contaminated samples and above risk level samples for each mycotoxin



**Figure 5: Rapeseed Meal -** Percentage of normal samples, contaminated samples and above risk level samples for each mycotoxin



**Figure 6: Rice Polish -** Percentage of normal samples, contaminated samples and above risk level samples for each mycotoxin



**Figure 7: Soya Bean Meal (SBM) -** Percentage of normal samples, contaminated samples and above risk level samples for each mycotoxin

Three levels of contamination have been defined for each mycotoxin

**Above Risk Level:** Level of mycotoxins were found to be more than tolerance limits that can impose serious threat on consumption.

**Contaminated ingredients:** Level of mycotoxins were more than LOD, but less than maximum tolerance limit (above risk level). These ingredients were considered positive samples.

**Non contaminated Ingredients:** Level of mycotoxins were found to be below LOD, limit of detection. These ingredients were considered normal samples.

### List of ingredients for mycotoxin risk matrix evaluation

Ingredients	Corn	CGM	DDGS	Rapeseed Meal	Rice Polish	SBM	Total	*Others	Grand Total
Number of Samples	376	145	141	171	128	239	1200	505	1705

### Maximum Tolerance Limits of various Mycotoxins

Name of Mycotoxin	Limit of Detection - ppb (LOD)	Maximum Tolerance Limit (ppb)
Aflatoxin	2	20
Ochratoxin	1	40
T2	10	200
Fumonisin	200	1000

\*Others - Sun Flower Meal, Wheat, Wheat Bran, Rice Gluten Meal, Broken Rice, Sorghum, MBM, Cotton Seed Meal, Bajra, Sesame cake etc.

nidhi\_madnawat@cargill.com

# Life after 60, Sr. Citizens

Dr Aloysius LOH

Life can begin at 60, it is all in your hands ! Many people feel unhappy, health wise and security wise, after 60 years of age, owing to the diminishing importance given to them and their opinion. But it need not to be so, if only we understand the basic principles of life and follow them scrupulously. Here are 10 mantras to age gracefully and make life after retirement pleasant.



## Time is precious

It is almost like holding a horses' reins. When they are in your hands, you can control them. Imagine that every day you are born again. Yesterday is a cancelled cheque. Tomorrow is a promissory note. Today is ready cash use it profitably. Live this moment; leave it fully, now, in the present time.

## Change is the only permanent thing

We should accept change - it is inevitable. The only way to make sense out of change is to join in the dance. Change has brought about many pleasant things. We should be happy that our children are blessed.

## Enlightened Selfishness

All offers are basically selfish. Whatever we do, we expect something in return. We should definitely be grateful to those who stood by us.

## Never say I am aged

There are three ages, Chronological, Biological and Psychological. The first is calculated based on our date of birth; the second is determined by the health conditions; the third is how old we feel we are. While we don't have control over the first, we can take care of our health with good diet, exercise and a cheerful attitude. A positive attitude and optimistic thinking can reverse the third age.

## Health is Wealth

If you really love your kith and kin, taking care of your health should be your priority. Thus, you will not be a burden to them. Have an annual health check-up and take the prescribed medicines regularly. Do take health insurance coverage.

## Money is important

Money is essential for meeting the basic necessities of life, keeping good health and earning family respect and security. Don't spend beyond your means even for your children. You have lived for them all throw and it is time you enjoyed a harmonious life with yours spouse. If your children are grateful and they take care of you, you are blessed. But never take it for granted.

## Relaxation and Recreation

The most relaxing and recreating forces are a healthy religious attitude, good sleep, music and laughter. Have faith in god, learn to sleep well, love good music and see the funny side of life.

But, our focus should be on the internal satisfaction and the happiness we derive by doing good for others, without expecting anything in return. Perform a random act of kindness daily.



## Forget and Forgive:

Don't be bothered too much about others mistakes. We are not spiritual enough to show our other cheek when we are slapped in one. But for the sake of our own health and happiness,

let us forgive and forget them. Otherwise, we will be only increasing our blood pressure.

## Everything has a purpose:

Take life as it comes. Accept yourself as you are and also accept others for what they are. Everybody is unique and is right in his own way.

## Overcome the Fear of Death:

We all know that one day we have to leave this world. Still we are afraid of death. We think that our spouse and children will be unable to withstand our loss. But the truth is no one is going to die for you; they may be depressed for some time. Time heals everything and they will go on.



# Mycotoxins - A force to be Reckoned with !

Dr Amit Patra, Hilke Willemsen and Kurt van de Mierop

Nutrex nv

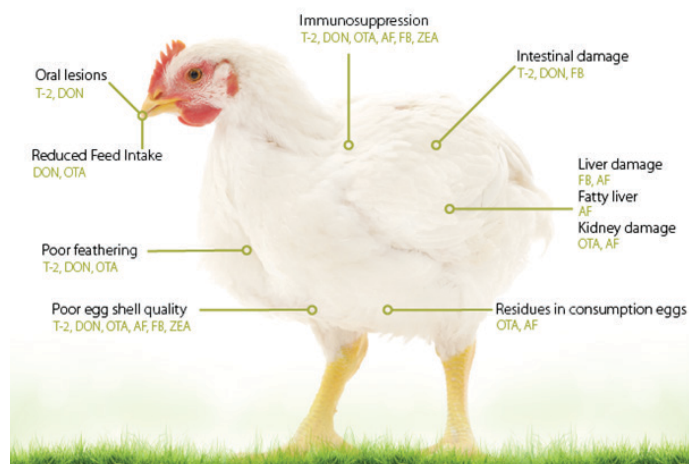
Mycotoxins are toxic substances originating from the secondary metabolism of different types of fungi such as *Fusarium*, *Aspergillus* and *Penicillium*. Mycotoxins are produced by fungi growing on crops in the field or during the storage of vegetable ingredients. Although the prevalence of mycotoxins can be region-specific due to climate and post-harvest storage conditions, mycotoxins can contaminate a wide array of crops and are a worldwide problem.

## MOST IMPORTANT MYCOTOXINS

Among hundreds of known mycotoxins, aflatoxins (AFs), ochratoxin A (OTA), fumonisins (FBs), zearalenone (ZEA) and trichothecenes (DON, T-2, HT-2) are considered the major mycotoxins in animal production. The variety of clinical effects caused by mycotoxins after ingestion ranges from reduced performance, suppressed immune function, organ damage, reduced gut health and nervous and reproductive system problems and depend on the type of mycotoxin, its dosage and the animal species. Significant economic losses are associated with mycotoxins due to their impact on animal performance.

Figure 1: Problems associated with mycotoxins in poultry

## SYNERGY



Contamination of raw materials with more than one mycotoxin often occurs as a given fungi can produce several kinds of mycotoxins. Furthermore, multiple mycotoxin contamination in complete feed is even more likely as animal feed contains several types of raw materials. The presence of multiple mycotoxins can generate additive or synergistic effects, making the negative effect on health and production bigger than the sum of the individual effects. In addition, chronic exposure to low concentrations of mycotoxins results in non-specific symptoms which are difficult to track-and-trace down to mycotoxins. Consequently, the ingestion of multiple low-dose mycotoxins can result in more severe negative effects on animal performance and larger economic losses than an acute toxic dose.

## MODIFIED MYCOTOXINS

Modified mycotoxins are derivatives of mycotoxins produced by fungi or formed by infected plants as part of

their defense mechanism. In addition, the formation of these derivatives can also occur by feed production processes and by microbial metabolism. Once ingested with the feed, the modified mycotoxin can be reconverted to the parent toxin by the microbiota and metabolism of the animal. Modified mycotoxins often exhibit a similar toxicity as their parent toxins, but can also be less or even more toxic than their parent toxin. Modified mycotoxins are problematic as they are hidden from many analytical detection methods, leading to an underestimation of the contamination level of the feed.

## SAMPLING

As mycotoxins cause diverse toxic effects on animals, it is important to adopt good management and control practices to reduce their impact. These practices include correct sampling, fast and reliable analysis methods and taking appropriate measures based on the results. Sampling is one of the most crucial, but underestimated parts of the detection. Mycotoxins are not distributed homogeneously in the raw materials. Therefore, if representative samples are not taken from different parts of the bulk, the results will very possibly be negative for mycotoxins, generating a false sense of security.

## WHAT MAKES A GOOD MYCOTOXIN BINDER?

Nowadays, the market is overflowing with commercial toxin binders, each marketed with their own physiochemical and biological properties. This can lead to confusion about choosing the appropriate product. Considering the following criteria will contribute to making an informed decision when evaluating the many available binders.

Reducing the bio-availability of the mycotoxins by use of substances that can reduce the absorption and promote excretion of mycotoxins, is the most efficient approach to reduce the adverse effects of mycotoxins on production animals. Broad spectrum mycotoxin binders with a high retention capacity in gastrointestinal conditions (acidic and neutral pH) are crucial to counteract the effects of mycotoxins. In addition, the specificity to the mycotoxin binder is essential to avoid the binding of nutrients and an efficient mycotoxin binder should be able to adsorb mycotoxins even when their contamination level is low. Lastly, mycotoxin adsorbing agents should have a high stability and should be safe for animals, consumers and the environment.

## FREE-TOX - THE POLYVALENT MYCOTOXIN BINDER

To help feed mills and farmers in dealing with the challenges of unpredictable and difficult to control mycotoxin contaminations, Nutrex developed the Free-Tox product range after extensive research combining in vitro and in vivo trials across various species. The Free-Tox brand covers a variety of products, ranging from binders composed only of various carefully selected silicate based components to more complex products with more diverse ingredients that act synergistically to prevent and counter the negative impact of mycotoxin contamination.

Visit [www.nutrex.eu](http://www.nutrex.eu) or contact [info@nutrex.eu](mailto:info@nutrex.eu) for more information

**\*References available on request\***

Contn from Page 45 :

**Demand for value added eggs on rise**

External Biosecurity	Internal Biosecurity
<ul style="list-style-type: none"> <li>• Purchase of poultry and poultry products</li> </ul>	<ul style="list-style-type: none"> <li>• Disease management</li> </ul>
<ul style="list-style-type: none"> <li>• Transport of poultry, removal of carcasses and manure</li> </ul>	<ul style="list-style-type: none"> <li>• Stocking density</li> </ul>
<ul style="list-style-type: none"> <li>• Supply of equipment, fodder and water</li> </ul>	<ul style="list-style-type: none"> <li>• Water lines management</li> </ul>
<ul style="list-style-type: none"> <li>• Access of visitors and personnel</li> </ul>	<ul style="list-style-type: none"> <li>• Disinfection and cleaning</li> </ul>
<ul style="list-style-type: none"> <li>• Vermin &amp; pest control</li> </ul>	<ul style="list-style-type: none"> <li>• Litter management</li> </ul>
	<ul style="list-style-type: none"> <li>• Feed Management</li> </ul>

**Water hygiene**

Salmonella spreads not only through feed, but also drinking water and equipment. Reducing the microbiological load of the drinking water and preventing the formation of biofilms are necessary. Chlorination is the most used water sanitization technique while acidification with organic acids helps reduce the pH of drinking water supply and support water hygiene in the absence or presence of chlorine. If applied properly, both these techniques together are very effective for control of Salmonella bacteria in drinking water.

**Bird Health**

The primary route of Salmonella infection is through fecal transmission. Unfortunately, specific drinking water/feed additives can complicate the process of colonization and invasion. Low acid strength short chain fatty acids strengthen the lower pH barrier of the upper gut and the mucosal barrier in the lower gut. High acid strength short chain fatty acids make it more challenging in the non-acidic areas of the gut.

Non-digestible oligosaccharides are complex carbohydrates that maintains the gut microbiota with beneficial effect on normal microflora and causes competitive exclusion of harmful pathogens including Salmonella. Some oligosaccharides have a high binding affinity to the fimbriae of gram-negative bacteria, including Salmonella, which reduces their ability to colonize in the intestine. Some short chain fatty acids can downregulate Salmonella virulence and reduce their intestinal invasion.

**Bacteriophage feed additives**

Innovative phage-based feed additives are the most advanced way to prevent harmful bacterial infection in poultry. They selectively target and eliminate the specific bacteria, without negatively impacting the balance of the birds' gut microflora. They have no side effects, are natural, non-GMO, and biodegradable. They can be easily applied through the water system, and top-of-the-line products like BAFASAL+G which are designed to control Salmonella, improve gut health, support production performance and reduce the unnecessary use of antibiotics. The current climate calls for producing better quality poultry produce with best farming practices that can help reduce the economic losses and reputational risks of pathogenic outbreaks, the addition of improved feed additives like bacteriophages will form a part of healthy and safe farm management practices.

**SUBSCRIPTION ORDER FORM****Poultry Fortune***India's National English monthly on Poultry*

Subscribe to  
**Poultry Fortune**  
and Update yourself  
on poultry

- ☐ 1 Year (12 issues): Rs 800      ☐ 2 Year (24 issues): Rs 1500  
☐ 3 Year (36 issues): Rs 2100      ☐ 5 Year (60 issues): Rs 3500

Please add GST 5% to the above mentioned rates.  
 Payment for subscription should be sent by Cheque/Bank Draft drawn in favour of **NRS Publications**, payable at Hyderabad.

Name of the Company: .....

Mr/Ms: ..... Designation : .....

Address: .....

Place / City : ..... State : ..... Pin Code : .....

Mobile: ..... Tel: .....

E-mail: .....

PAYMENT: Please find enclosed a  
 Bank Draft/Cheque No ..... Dated .....

for Rs ..... favouring '**NRS PUBLICATIONS**', payable at Hyderabad, India.

Please send the magazine to the above address.

Date:

Signature

Payment may also be sent through wire transfer. Our Bank Account details are:  
**A/c Name:** NRS Publications, **Bank Name:** ICICI Bank Limited, **A/c No:** 000805004644,  
**IFSC Code:** ICIC0000008, **PAN No.** ABMPM6671L, **Swift Code:** ICICINBBNRI.

NATURE OF ACTIVITY (Please mark ✓ in the appropriate box)

- ☐ Farming    ☐ Integrated Farming    ☐ Hatchery / Breeding Co.  
☐ Feed Manufacturer    ☐ Pharmaceutical Co.    ☐ Processing  
☐ Equipment Manufacturer    ☐ Exporter    ☐ Veterinarian  
☐ Consultant    ☐ Insurance Company    ☐ Trader: Egg / Broiler  
☐ Dealer / Distributor for: Feed / Pharmaceutical / Equipment / Hatchery    ☐ Others

Mail this Subscription Order Form duly filled in along with payment to:

The Circulation Department,  
**POULTRY FORTUNE**, NRS PUBLICATIONS  
 BG-4, Venkataramana Apartments,  
 11-4-634, A.C.Guards, Near IT Towers,  
 Hyderabad - 500 004, India.

Tel: 2330 3989, Mob: 96666 89554

E-mail: info@poultryfortune.com • forum@poultryfortune.com  
 Website: www.poultryfortune.com

**NRS PUBLICATIONS**

www.poultryfortune.com

**FOR OFFICE USE**

Inward No. .... Received on ..... DD/Cheque No: .....  
 Date : ..... Subscription No. : ..... Initial: .....



# Researchers develop automated water measurement system for poultry

In poultry nutrition, water is the most important nutrient for the overall health and performance of birds yet less focus has been on water compared to the other nutrients.



In animals, water is used for the metabolism of nutrients, regulation of body temperature, digestion of food and elimination of wastes, etc. In a thermo-neutral environmental condition, a broiler consumes twice as much water as feed until they reach a slaughter age. The water to feed intake ratio (WI:FI), which is the amount of water a bird consumes per unit of feed intake, is higher when the birds are young but the ratio gradually decreases as the birds grow older and tend to remain constant thereafter (for eg. WI:FI is around 2.5 on day 10 and 1.7-1.8 on days 35-42), writes Dr. Nishchal Sharma, Postdoctoral Research Fellow at University of New England.

Water intake in broilers is related to a number of factors including shed temperature, water temperature, water quality, water taste, lighting program, feed composition, feed availability, stocking density, general health and gut health of birds, types of drinkers and drinker flow rates. Increase or decrease in WI:FI indicates possible issues – this can be related to birds, management of shed, and nutrition.

Accurate daily recording of water intake allows producers to monitor any abrupt changes in water intake and identify nutritional, health or managemental issues associated with it. In the current context of “water restrictions” imposed by the Australian government, it is also important that we monitor the use of water and avoid wastage as much as possible.

At University of New England in Armidale NSW, a group of researchers and technicians (Nishchal Sharma, Shubiao Wu and Brad Dawson) have developed automated water measurement system that can accurately measure water intake in 48 individual pens. Each pen can hold 14 birds and has a 1.4 litre reservoir with a microcontroller to monitor water consumption. Sensors in the reservoir determine when it is empty and trigger the opening of a solenoid valve to allow it to refill.

A flow meter on the inlet line measures the amount of water taken to refill the reservoir. This data, along with a cumulative count of the water use since the beginning of the trial and the number of refills is transmitted wirelessly to a computer where it is stored in a database. Information in the database can be viewed by the researchers through a web browser. The reservoir is a clear, graduated cylinder, so any water remaining at the end of a period may be manually recorded. During initial days when the chicks are small, the reservoir fills once a day but as the chickens grow older, it fills 2-4 times a day.

UNE researchers aim to study the effects of dietary manipulations on performance and water to feed intake ratio of broilers throughout the grow-out cycle. The project is funded by Agrifutures Australia. Nishchal Sharma, a post-doctoral research fellow at UNE working in the Agrifutures project led by Shubiao Wu, has used the automated drinker system in their first experiment and the data obtained are very promising in revealing the relationship between the nutrients provided to the birds and water intake.

According to Dr Nishchal Sharma, “traditional manual way of measuring water intake in poultry research is to supply water in each cage/pen through water troughs or jars and weigh them at various time periods. This is a very time consuming and labour intensive process. The results are also less accurate as the water evaporation through troughs is not taken into account and leakage can unavoidably occur. With this new system in place, we can produce more accurate results of



water consumption and these can be directly applied to the industry.” He also added that “the capacity to measure water intake in 48 individual pens allows researchers to accommodate 6-8 treatments in one study.”

The team also have a plan to collaborate with other researchers to make more effective use of the system.

This article first ran on Australia's Poultry Hub.

*Courtesy: Global Ag Media*



# HRIN 恒润机械

## Professional Feed Machinery Manufacturer

### SFSP66 Series Hammer Mill

Max capacity: 25-35t/h  
The hammer screen clearance is adjustable.  
Equipped a ultra wide multi-cavity grinding  
chamber and secondary buffer trough.



### SLHSJ Series Double-shaft Paddle Type Mixer

Short mixing cycle, high mixing evenness, the CV can  
reach to 5% or less.  
Full widely-opened twin door discharging structure : at  
the bottom of mixer.



### HRZL Serise Pellet Mill

Suitable for manufacturing all kinds of poultry  
feed.  
The secondary transmission is adopted by  
V-belt & synchronous belt combination.  
Material balanced by double pressure roller  
before pelleting.



### HRSL Series Crumbler

The roller gap can be adjusted precisely.  
Less powdery, easier for maintenance.



Model	HRZL420-II	HRZL550-II	HRZL660-II
Power (kW)	55×2	75×2	110×2
Capacity(t/h)	8-11	12-16	22-25
Die. (mm)	φ3.5	φ3.5	φ3.5



**ZHANJIANG HENGRUN MACHINERY CO., LTD**

Shapo Industrial Zone, Suixi, Zhanjiang, Guangdong,  
China (524300)

Email: [hirin\\_co@126.com](mailto:hirin_co@126.com)

Tel: +86 759 7770818 Fax: +86 759 7769088

Web: [www.hirin.cn](http://www.hirin.cn)

## Ultimate Solution... *for* Liver Protection



# *Hepawell*<sup>™</sup>-P

***Multiple action and Versatile benefits***

For further information please contact :  
**VENKY'S (INDIA) LIMITED**  
ANIMAL HEALTH PRODUCTS DIVISION

**An ISO 9001 Certified Company**

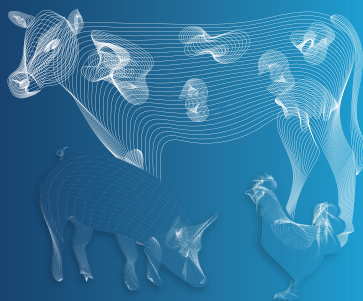
'Venkateshwara House', S. No. 114/A/2, Pune Sinhad Road, Pune 411030.

Tel.: +91-20-24251803, Fax: +91-20-24251060 / 24251077. E-mail: ahp@venkys.com Website: www.venkys.com

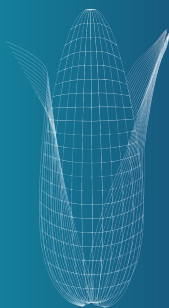


## Your Complete Solution Provider

**Antimicrobial  
Resistance**



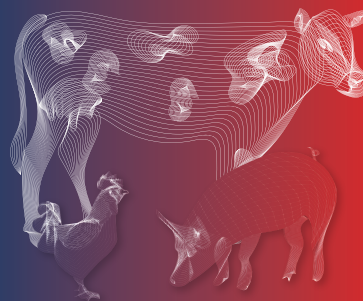
**Poultry  
Gut Health**



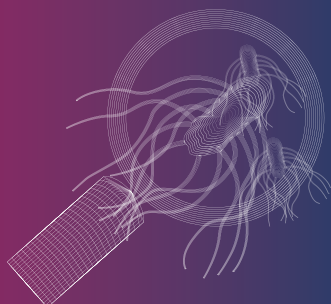
**Mycotoxin  
Risk  
Management**



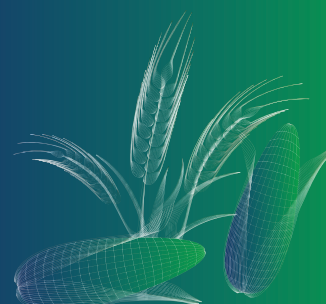
**Trace Mineral  
Nutrition**



**Feed  
Safety**



**Salmonella  
Control**



**Trouw Nutrition India Pvt. Ltd.,**  
1st Floor, Plot No. 16, Jayabheri Enclave, Gachibowli  
Serilingampally, Hyderabad - 500032 Telangana.

T: +91 40 2988 0258  
E: [customercareindia@trouwnutrition.com](mailto:customercareindia@trouwnutrition.com)  
W: [www.trouwnutrition.in](http://www.trouwnutrition.in)





# Durim™

## Ensures High Immunity and Stress Endurance



Kemin Industries South Asia Pvt. Ltd.

#C-3, 1st Street, Ambattur Industrial Estate, Chennai-600 058, Tamil Nadu, India, | Tel: 044 42202800,  
Email: mail.india@kemin.com | Web: www.kemin.com

© Kemin Industries, Inc. and its group of companies 2020. All rights reserved. ®™ Trademarks of Kemin Industries, Inc., U.S.A.