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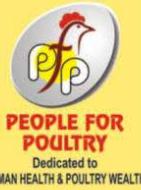
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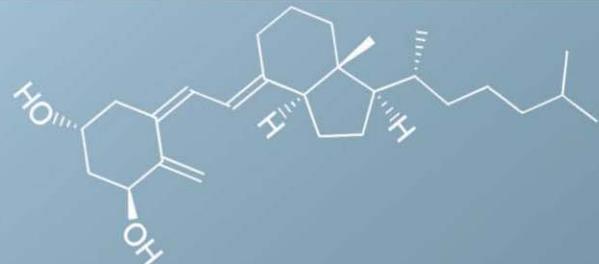
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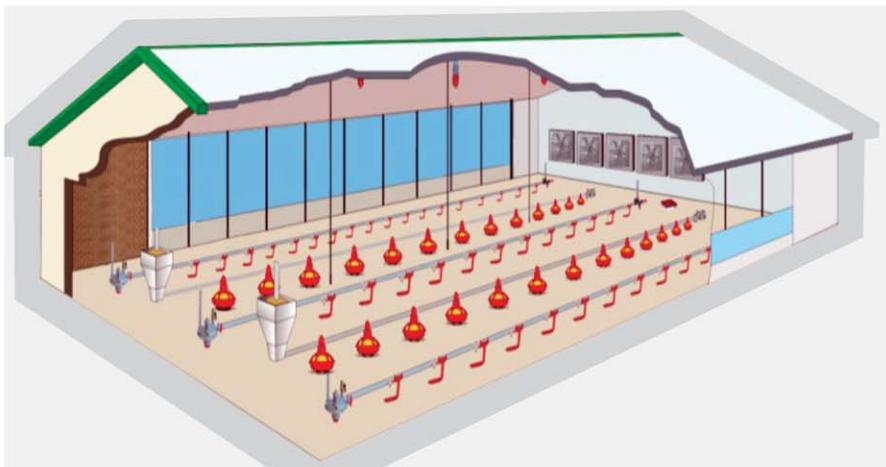
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# Prebiotics and probiotics use as feed additives in poultry

Dr. Mrigakshi Yadav, Dr. Satish Kumar and Dr. Ruokuobeinuo Houzha

College of Veterinary and Animal Sciences, G. B. Pant University of Agri. & Tech., Pantnagar-263145

Corresponding Author- dr.mrigakshiyadav@gmail.com

## Introduction:

Human population is increasing each day, so is their palatability. There is increasing demands in poultry meat and products. Therefore, to meet the needs and demands of entire human populations feed additives are primarily included into the poultry diet to retain optimal poultry productions by improving

antibiotics as growth promoter are prebiotics and probiotics.

## Prebiotics feed additives

Prebiotics are non-digestible feed ingredients by host enzymes that enhance growth of indigenous gastrointestinal bacteria. Characteristics and desirable properties of prebiotics are:

Properties	Positive influences
• Not hydrolysed or absorbed in upper gastrointestinal tract	• Higher short chain fatty acid production
• Resistant to acidic pH, heat, cold. Not affected with time	• Improved feed conversion ratio and body weight gain
• Selectively stimulate growth and function of beneficial bacteria	• Enhanced Vitamin B synthesis
• Positively modulates host defence system	• Positively affected mineral absorption
• Antagonistic to pathogens by inhibiting their adhesion to gut lining	• Cancer prevention
• Improves brush border mucin barrier	• Diminution in ammonia and urea excretion • Improves egg cholesterol, egg shell and bone quality

feed utilisation and limiting diseases. Common feed additives used include antimicrobials, antioxidants, emulsifiers, binders, pH control agents and enzymes. It is a concern associated with the widespread use of antimicrobials in conventional poultry production and its potential linkages to antimicrobial resistance and unbalanced microflora in human's gastro-intestinal tract. This has led to their usage ban in most of Europe and United States. Usage in the right proportion and wherever it is required provides a huge benefit to meet the demands of poultry products. Since complete withdrawal of antibiotics as growth promoter in poultry has led to poor gut health signs, poor growth performance, malabsorption and various diseases. Nutrients required to improve poultry production has come up with two most common alternatives to

The predominant prebiotics employed are fructooligosaccharides, galactooligosaccharides, mannanoligoasaccharides, xylooligosaccharides, inulin, lactulose, soyaoligosaccharides, isomaltoligosaccharides, trans-galacto-oligosaccharides, lactitol stachyose, raffinose and pyrodextrines. Several commercial prebiotics are prepared from yeast cells (*Saccharomyces cerevisiae*) including cell walls and fermentation products. Legumes, fruit and cereals are natural sources of prebiotics. Bio-Mos®, composed of mannanoligosaccharides is one of the commercially available prebiotic.

## Probiotics feed additives

Probiotics are defined as live mono or mixed culture of non-pathogenic microorganisms, resistant to gastric and bile acids. Probiotics ingestion beneficially affects the host animal by improving the

characteristics of intestinal microbiota. Characteristics and desirable properties of probiotics are:

Properties	Positive influences
• Host origin and non-pathogenic	• Change intestinal microbiota
• Resist processing and storage	• Induce immune system
• Endure gastric acid and bile acids	• Decrease inflammatory reactions
• Have epithelium or mucus attaching capability	• Prevent pathogen proliferation
• Persist in the intestinal tract and produce repressive compounds	• Enhance animal performance and reduce carcass contamination
• Modify microbial activities	• Diminution in ammonia and urea excretion
	• Lower serum cholesterol

Probiotics are used in the prevention and as adjuvant therapy in antibiotic associated diarrhoea in poultry. Several probiotics commonly employed in poultry as single strain or multi-strain are:

Genus	Major species used
<i>Bacillus</i>	<i>B. subtilis</i> , <i>B. licheniformis</i> , <i>B. amyloliquefaciens</i> , <i>B. megaterium</i> , <i>B. mesentericus</i> , <i>B. polymyxa</i> , <i>B. subtilis</i>
<i>Lactobacillus</i>	<i>L. acidophilus</i> , <i>L. bulgaricus</i> , <i>L. reuteri</i> , <i>L. salivarius</i> , <i>L. sobrius</i> , <i>L. casei</i> , <i>L. plantarum</i> , <i>L. paracasei</i> , <i>L. rhamnosus</i> , <i>L. farciminis</i> , <i>L. salivarius</i> , <i>L. fermentum</i> , <i>L. amylovorus</i>
<i>Lactococcus</i>	<i>L. lactis</i>
<i>Enterococcus</i>	<i>E. faecium</i>
<i>Bifidobacterium</i>	<i>B. animalis</i> , <i>B. bifidum</i>
<i>Pediococcus</i>	<i>P. acidilactici</i> , <i>P. faecium</i> , <i>P. parvulus</i>
<i>Clostridium</i>	<i>C. butyricum</i>
<i>Streptococcus</i>	<i>S. thermophilus</i> , <i>S. faecium</i>

*Saccharomyces* *S. cerevisiae*, *S. boulardii*

*Carnobacterium divergens*, *Aspergillus oryzae* and *Candida pintolepesii*.

Probiotic poultry feed additives commercially available are Probioway (composed of multiple bacterial strains), Cibuzz poultry, Bio-Plus 2B® (composed of  $1.0 \times 10^{12}$  CFU *Bacillus licheniformis* and *B. subtilis*) etc.

### Synbiotics

These are the combination of probiotics and prebiotics which improves the survival and establishment of live microbial dietary supplements (probiotics) in gastrointestinal tract, helping poultry to achieve better growth performance. Prebiotics

advance the rapid establishment of the probiotic strains through the provision of an additional nutrient source. Probiotics feeding beneficially influences the intestinal equilibrium and constitutes a protective barrier for the alimentary tract. Prebiotics, on the other hand, supply energy and nutrients for probiotic bacteria. Therefore, an appropriate combination of both components in a single product should ensure a superior effect, compared to the activity of the probiotic or prebiotic alone. Such as a combination of *Bifidobacterium* or *Lactobacillus* genus bacteria with fructooligosaccharides in synbiotic products is most popular. Other combinations used in poultry are:

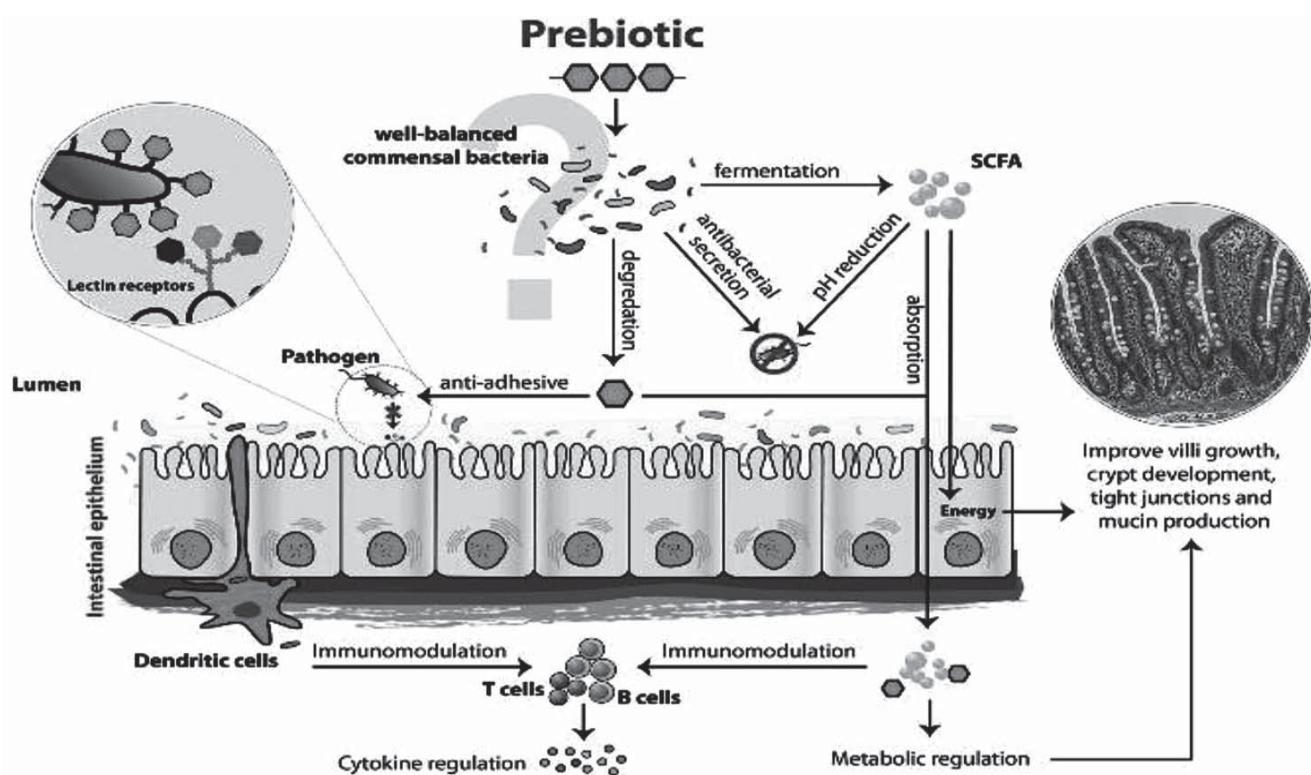
Probiotic	Prebiotic
• <i>Enterococcus faecium</i>	Fructooligosaccharides
• <i>Bifidobacterium animalis, Enterococcus faecium, Lactobacillus reuteri, L. salivarius; Pediococcus acidilactici</i>	Inulin
• <i>Lactobacillus acidophilus, L. casei, L. salivarius, L. plantarum, L. rhamnosus, L. brevis; Bifidobacterium bifidum, B. lactis, Streptococcus thermophilus</i>	Inulin

Some of the commercially available synbiotics for poultry feeding are UltraCruz® poultry probiotic supplement, Synbiotic poultry, Zagro- Gut bio, **Pro(N8)ure** and PoultryStar®. The proportion of prebiotic and probiotic used in starter diet is 0.2% and 0.05% (1:4) respectively, while in grower diet is 0.1% and 0.05% (1:2) respectively.

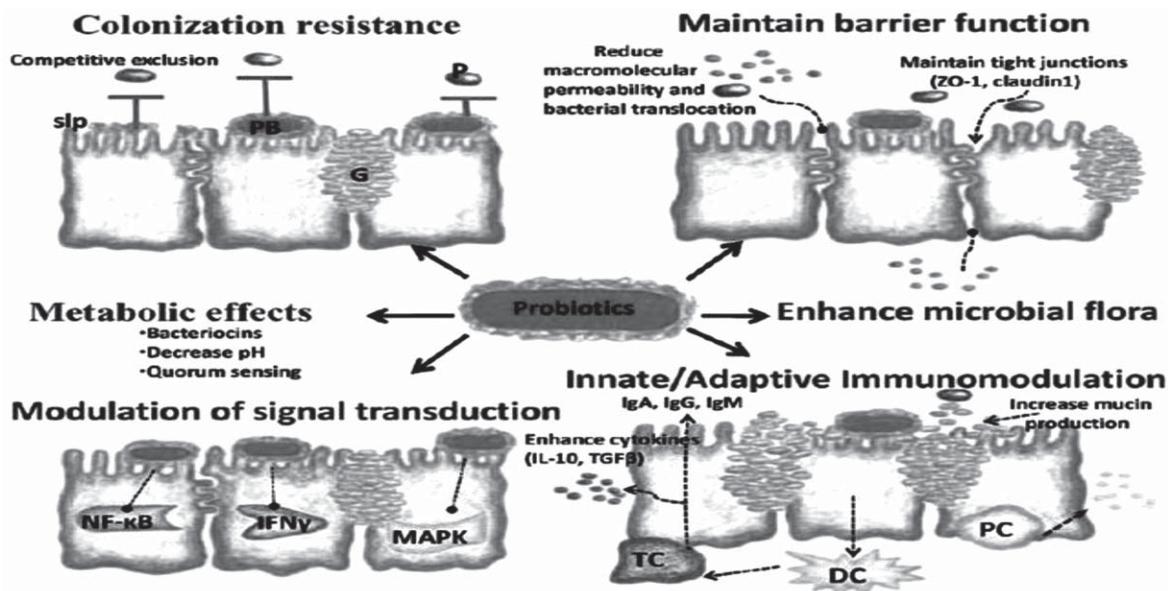
### Mechanism of action

Prebiotics are fermented by the gut commensal microbiota into short chain fatty acids (SCFA) mainly

acetate, propionate and butyrate. SCFA lower the luminal pH, provide energy sources for epithelial cells and have profound effects on inflammation modulators and metabolic regulations. Some bacterial strains produce antimicrobial factors or stimulate the immune system by signalling dendritic cells. Oligosaccharides and monosaccharides can reduce pathogen colonization by blocking the receptor sites used by pathogens for attachment to the epithelial cell surface.



**Fig. 1: Potential mechanism of action of prebiotics**



**Fig. 2: Potential mechanism of action of probiotics**

Dendritic cell (DC), T lymphocyte (TC), Probiotics (PB), Surface-layer proteins (slp), Microbial pathogens (P), Zona occludins (ZO-1), Nuclear factor-kappa B (NF- $\kappa$ B), Interferon- $\alpha$  (IFN $\alpha$ ), Mitogen-activated protein kinases (MAPK), Interleukin-10 (IL-10), Transforming growth factor- $\beta$  (TGF- $\beta$ ), T regulatory cells (Tregs), Secretory immunoglobulin A (sIgA), Goblet cells (G), Paneth cells (PC).

Probiotics and surface-layer proteins competitively exclude microbial pathogens from mucosal surfaces. Tight junction proteins, such as zona occludins and claudin1, prevent both uptake of intact macromolecules and translocation of viable organisms to mesenteric lymph nodes. Probiotic strains possess the ability to modulate signal transduction pathways to block activation and translocation to the nucleus of the transcription factor, nuclear factor-kappa B, interferon- $\alpha$ , and mitogen-activated protein kinases. Through a cascade of signaling events, probiotics can enhance production and secretion of anti-inflammatory cytokines, including interleukin-10 and transforming growth factor- $\beta$  by a subset of immune cells, referred to as T regulatory cells. Humoral immune system responses to probiotics include enhanced production of immunoglobulins, including secretory immunoglobulin A production association with mucosal membrane. Innate immune responses to probiotics include increased mucin and trefoil factor production by intestinal goblet cells and enhanced production of antibacterial defensins by Paneth cells and intestinal epithelia.

## Conclusion

Both prebiotics and probiotics improve growth performance, immunological response and resist the pathogens. The combination of these as synbiotic is more efficient in the stimulation of intestinal microbiota and protection of poultry health. Prebiotics may be used alternatively to support the effect of probiotics. Use of probiotics, prebiotics and synbiotics as feed additives is safe and does not have any negative impact on the natural environment and reduces the demand for antibiotic-based growth stimulators. More future studies may encourage focusing on appropriate combinations of probiotic and prebiotics in synbiotics, their mechanisms of action in stimulating immune system, evaluation of their impact on tissue specific effects and intestinal digestive process. Thus altogether these effects may help to improve their utilization in poultry production. Nutrigenomics and metabolomics approaches may be immense help in elucidating the mechanisms of prebiotics and probiotics and their interaction between the host and microbiome.

## Poultry shops dump waste on banks of Uyyakondan



TRICHY: While Trichy Corporation is keen on streamlining unhygienic private vacant plots, vacant land along the banks of freshwater canals in the city seems to have fallen off the radar. Vacant land on the banks of Uyyakondan canal in Vayalur Road under ward 53 in K Abishekapuram zone is being exploited by the poultry shops to dump their waste.

Trichy Corporation launched exclusive vehicles in August this year to collect waste from meat and seafood stalls in the city. The collected waste is then moved to the corporation's biogas plant at Gandhi market to produce biogas to power an electric generator.

However, it seems that the initiative is diluted as Vayalur road, one of the densely populated

residential settlements witness rampant dumping of poultry waste along the Uyyakondan bank in MM Nagar, even during the day time. The precedence has defeated the very purpose of the civic body's initiative to prevent clandestine dumping.

"We could not bear the foul smell emanating from the poultry waste mostly the chicken feathers dumped near Uyyakondan bridge. Load carriers dump the waste without any fear of being penalised," V Balasubramanian, a resident of Royal Vesta Apartment, Vayalur Road said.

A few months back, the civic body caught a load vehicle red-handed while dumping animal waste on the banks of the Uyyakondan canal and penalized the poultry shop responsible. However, as such penalization measures did not sustain. Poultry shops from various parts of the city now target the vacant space in MM Nagar and Vayalur Road to get rid of the poultry waste. "We are in the process of sensitizing the poultry and meat shops across the city to refrain from dumping waste at vacant lands. The complaint surfaced from Vayalur road residents will be inquired," said a senior official with Trichy Corporation.

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*M.A.Waheed***S.S. Associates****SHR PACKAGING**

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**Cell: 78931 40260**

## NATIONAL EGG CO-ORDINATION COMMITTEE

DAILY / MONTHLY EGG PRICES DECLARED BY NECC AND PREVALENT PRICES AT VARIOUS PRODUCTION CENTRES (PC) AND CONSUMPTION CENTERS (CC) DECEMBER 2019

Name Of Zone \ Day	NECC Prices																																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Average			
Ahmedabad	484	484	486	486	486	486	486	486	486	470	470	474	477	479	481	481	481	481	481	481	481	481	481	481	483	485	490	495	500	-	-	483.25		
Ajmer	463	464	464	460	450	439	439	439	451	451	446	438	442	446	451	451	451	451	451	451	452	442	442	448	460	483	483	-	-	-	455			
Asansole	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	509	509	505	-	-	505.14			
Barwala	463	464	465	464	451	439	439	445	451	451	451	438	444	450	450	450	452	452	452	452	452	452	442	448	455	472	477	478	478	-	-	454		
Bengaluru (CC)	463	463	465	465	465	450	450	453	458	460	462	462	455	460	460	460	460	460	460	460	460	460	440	440	445	450	455	460	465	470	-	-	457.53	
Brahmapur (OD)	467	467	467	469	469	469	469	469	469	464	464	464	464	464	464	464	464	464	464	464	464	464	464	464	464	464	467	470	472	474	-	-	466.14	
Burdwan (CC)	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	514	-	-	511.1	
Chennai (CC)	473	473	473	478	478	478	478	478	460	460	460	465	465	465	465	465	465	465	465	465	465	465	445	445	455	465	475	475	485	-	-	465.92		
Chittoor	466	466	466	471	471	471	471	453	453	453	453	458	458	458	458	458	458	458	458	458	458	458	448	448	448	448	458	458	468	478	-	-	458.57	
Delhi (CC)	485	485	485	485	485	485	485	480	480	475	475	460	465	472	472	472	472	472	475	475	475	475	475	475	475	490	501	501	501	501	-	-	480.67	
E.Godavari	455	455	457	457	457	457	452	452	454	454	454	452	452	452	452	452	452	452	452	452	452	452	452	455	458	460	464	464	-	-	-	454.53		
Hyderabad	441	443	444	444	444	430	425	428	431	434	436	436	425	430	433	433	433	433	433	433	433	425	415	410	415	425	435	440	445	450	455	-	-	433.5
Ludhiana	457	457	459	459	459	454	441	445	445	445	445	445	445	446	446	446	446	446	446	446	446	446	446	446	448	448	456	456	460	460	-	-	449.96	
Midnapur (KOL)	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	511	514	-	-	511.1		
Miraj	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Mumbai (CC)	496	496	498	499	499	499	498	480	480	486	486	489	491	491	486	486	486	488	488	488	480	470	465	465	475	495	495	500	505	-	-	488.07		
(CC)	500	505	505	500	500	500	500	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	509	524	528	533	-	-	507.85		
Mysuru	467	467	469	469	469	469	469	454	454	454	457	462	464	466	466	466	464	464	464	464	464	464	444	444	449	459	464	469	474	-	-	461.53		
Naupur	455	455	455	460	460	450	445	445	450	445	445	440	440	445	445	445	443	435	435	430	425	425	438	450	-	-	-	-	-	-	444			
Namakkal	431	431	433	433	433	425	415	410	413	416	421	423	415	420	420	410	410	410	410	410	410	410	400	390	400	410	410	430	440	-	-	418.28		
Patna	481	500	500	500	500	499	500	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	505	524	524	528	-	-	505.17		
Patna (CC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	528			
Pune	495	495	496	496	496	496	496	485	475	480	481	483	484	479	483	483	483	483	483	475	465	465	465	475	485	490	495	501	-	-	484.14			
Ranchi (CC)	519	519	519	514	514	514	510	514	514	514	514	514	514	514	514	514	519	519	519	519	519	519	519	519	533	533	538	-	-	519.07				
Vijayawada	455	455	457	457	457	457	452	452	454	454	454	452	452	452	452	452	452	452	452	452	452	452	455	458	460	462	464	-	-	454.53				
Vizag	455	455	460	460	460	460	460	470	470	470	470	470	470	470	470	470	470	470	470	470	470	470	470	475	475	475	475	-	-	467.32				
W.Godavari	455	455	457	457	457	457	452	452	454	454	454	452	452	452	452	452	452	452	452	452	452	452	455	458	460	462	464	-	-	454.53				
Warangal	444	444	446	447	447	443	428	431	434	437	439	439	433	436	436	436	436	436	436	436	436	436	428	418	418	428	438	443	448	453	-	-	436.35	
Allahabad (CC)	481	481	486	486	481	476	471	471	486	481	471	476	490	495	486	480	476	476	471	462	476	486	500	509	509	505	-	-	483.89					
Bhopal	465	470	470	475	475	475	470	470	470	470	470	470	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	-	-	473.17		
Hospet	428	428	430	430	415	415	418	418	425	427	427	420	425	425	425	425	425	425	425	425	425	425	425	425	425	425	430	435	-	-	422.35			
Indore (CC)	470	470	470	470	470	450	460	465	465	465	460	465	465	465	465	465	465	465	465	465	465	465	460	460	460	460	460	460	480	485	480	-	-	465.71
Jabalpur	477	477	478	478	472	462	457	457	461	461	463	464	467	467	467	467	467	467	467	467	467	467	467	474	474	478	487	-	-	466.03				
Kanpur (CC)	486	486	486	486	476	467	467	467	467	467	476	486	486	486	486	486	486	486	486	486	486	486	486	486	486	486	486	486	486	-	-	488.03		
Kolkata (CC)	493	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	-	-	494.92	
Luknow (CC)	510	510	510	510	510	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	-	-	507.53
Raipur	480	480	482	482	477	467	477	461	461	464	464	464	464	469	469	470	471	472	473	473	474	475	475	475	475	475	475	475	475	-	-	474.35		
Surat	490	490	492	492	492	492	478	480	490	493	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	495	-	-	493.35	
Varanasi (CC)	517	517	510	510	503	503	497	497	503	503	510	510	510	510	510	510	510	510	510	510	510	510	510	510	510	510	510	510	510	510	510	-	-	493.35

## POULTRY LINE, JANUARY 2020

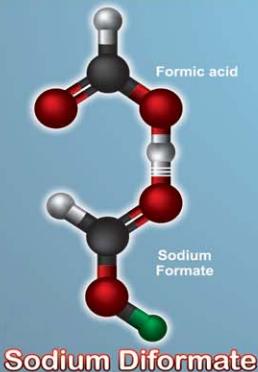


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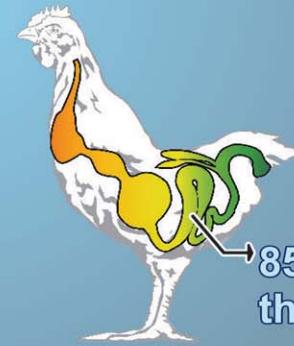
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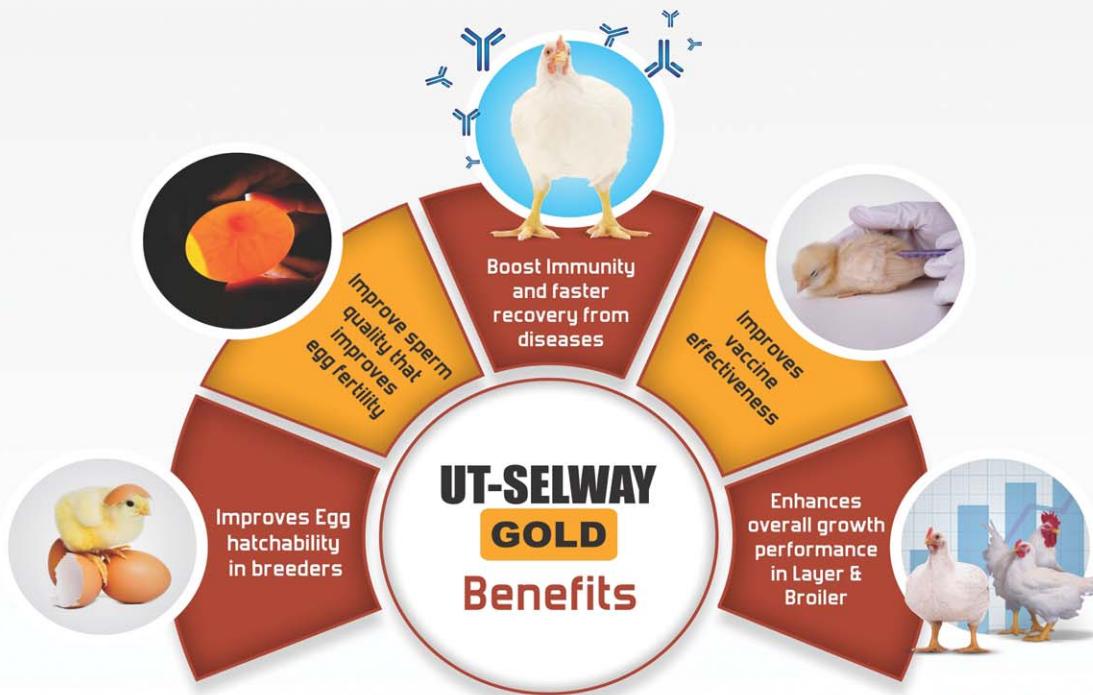
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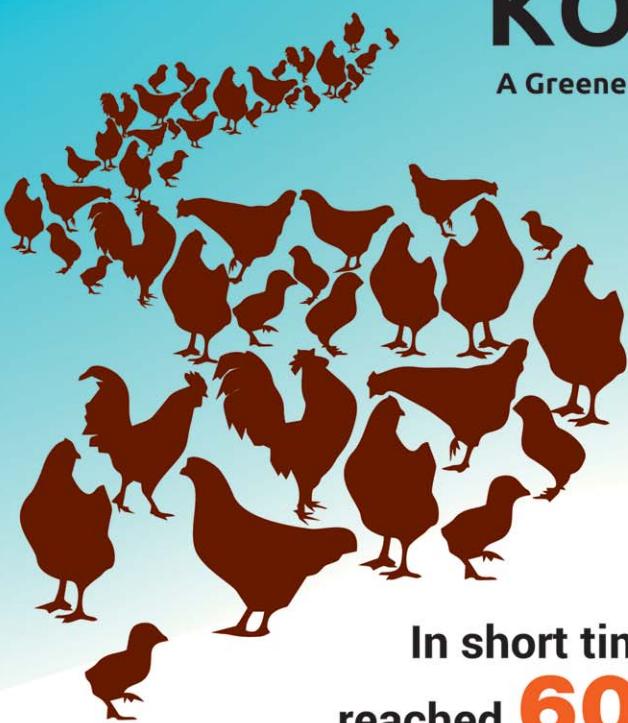


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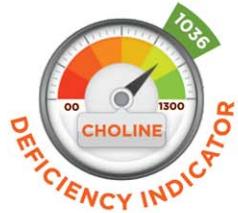


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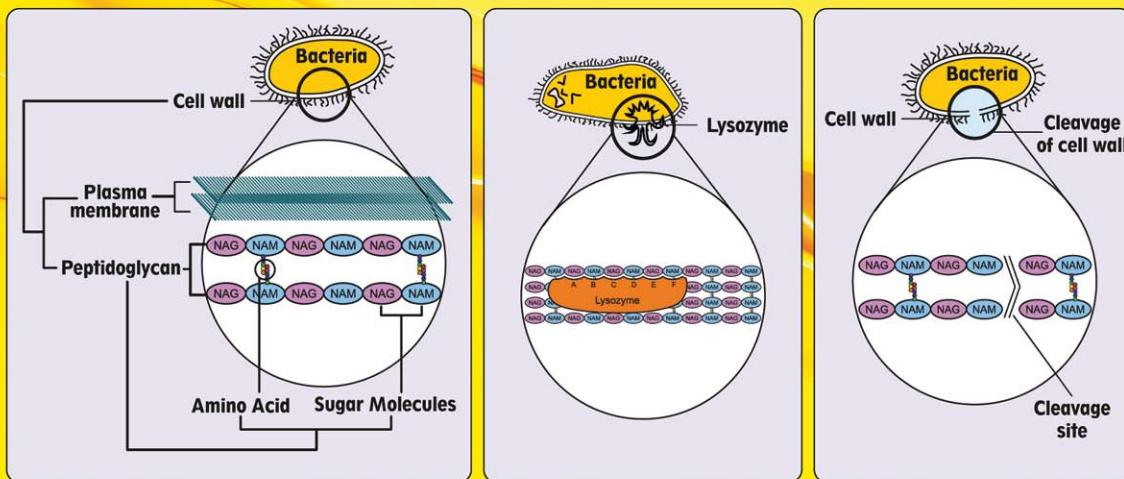


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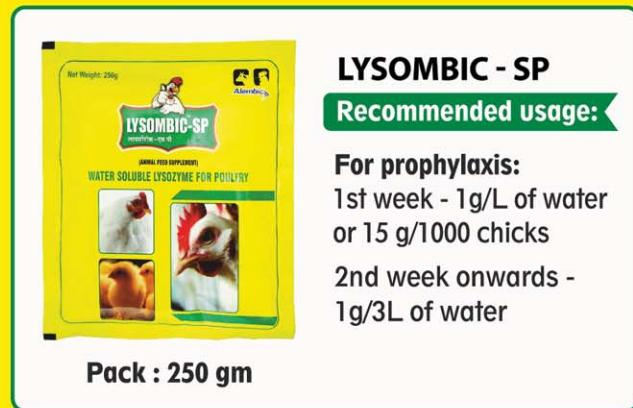
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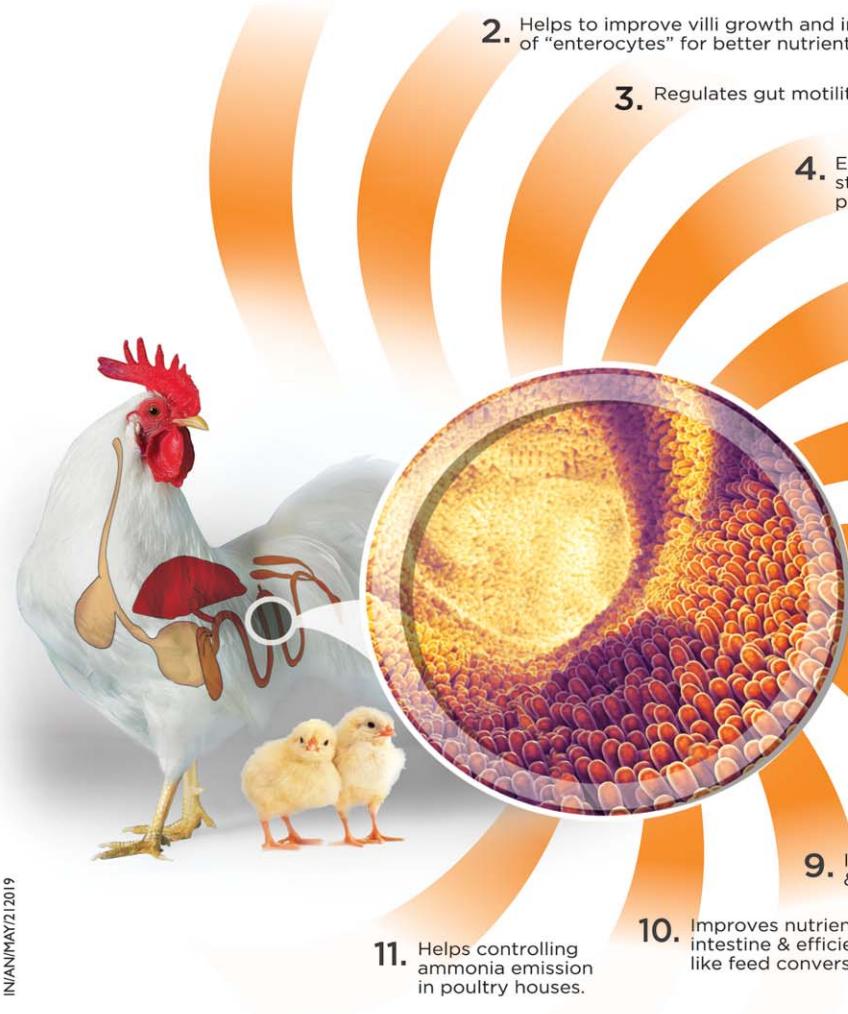
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# Common Diseases Affecting Backyard Poultry

Prachurya Biswal<sup>1</sup>, Susheel Kumar<sup>2</sup>, Arun Somagond<sup>1</sup> and Seema Yadav<sup>1</sup>

<sup>1</sup>PhD scholar, LPM section, ICAR-Indian Veterinary Research Institute, Izatnagar, Bareilly, Uttar Pradesh

<sup>2</sup>Veterinary officer, Veterinary poly clinic, Chamba, Himachal Pradesh (Former MVSc scholar, ICAR-NDRI)

Corresponding author\*-prachuryabiswalvet@gmail.com

## Introduction

The keeping of backyard poultry gives low cost protein, highly nutritious eggs, source of income and an enjoyment source to many people. The production of fresh eggs and meat for human consumption, plus the enjoyment they give as pets or show birds, makes poultry valuable members of many families in rural India. Unfortunately, poultry, just like other livestock, may become ill from many causes. There are a few major categories of disease that commonly occur in small poultry flocks. These include external and internal parasites, Marek's disease, respiratory disease, nutritional problems, reproductive diseases and fowl pox.

## Characteristics of Healthy Birds

In order to identify signs of diseases early, it is important to be familiar with the **characteristics of a healthy bird**. A healthy bird displays the following traits:

- Erect stance with head and tail elevated
- Bright red comb and wattles
- Filled-out face parts
- Bright and alert eyes
- Clean nostrils
- Smooth, neat, clean feathers
- Filled-out legs
- Joints that are smooth and cool to the touch
- Weight that is typical for the type and age of the bird
- Powerful movements when struggling
- Scales on the legs and feet that are clean and waxy in appearance
- Colour of the skin that is characteristic for the breed and strain of bird, as well as the age and state of production

In addition, a healthy bird eats and drinks frequently and displays no signs of respiratory distress.

## External Parasites

Poultry can carry a large variety of parasites on their bodies. These range in size from large, blood sucking ticks up to 1cm in size, down to the microscopic scaly face (and leg) mite that is less than 0.5mm in size. Other external parasites that are commonly encountered are the stickfast flea (small, black fleas on the comb that do not move), and lice (small, white insects that move rapidly through the feathers). External parasites generally cause mild clinical signs such as feather damage, anaemia and irritation, but they may also carry severe, life threatening diseases such as tick fever. Backyard poultry should be examined regularly, and treated for external parasites every two to three months. Products to treat these diseases can be recommended by the veterinary officer.

## Internal Parasites

Backyard poultry also carry a wide range of internal parasites. These range from large roundworms (Ascarids) that are visible with the naked eye; to small, single celled organisms only visible under a microscope (Coccidia, Trichomonas, and Giardia). Internal parasites attack the lining of the intestine, and absorb nutrients from the gut that the bird should be using for maintenance of its own body and production of eggs. Worms (and other internal parasites) are spread from bird to bird by the ingestion of eggs from the faeces of infected birds. Regular removal and cleaning of faeces from the bird's enclosure will result in less worm eggs in the environment, and less chance of worms spreading from bird to bird. Signs of internal parasitism are weight loss, pale combs or diarrhoea. The local veterinary officer will be able to look at faeces under

the microscope, and advise you which type of worms and protozoan parasites are present by the type and number of eggs they observe in the faecal sample.

Some types of worms, such as Capillaria, are more difficult to treat than others. The veterinarian will be able to advise a suitable treatment that is specific for the parasites they observe. It is important that withholding periods for treatments are observed. This requires that eggs and meat from birds treated with certain drugs be discarded for a period of time after the drug has been used. This prevents humans ingesting the drugs the chickens were treated with via the eggs or meat. Make sure to check the exact withholding period with your veterinarian, or on the label of the product.

### **Marek's Disease**

Marek's disease is a viral infection that only affects poultry. The virus is spread from bird to bird in feather dander and dust. It lives in the environment for long periods, and can spread between properties on people's clothes and on shared equipment. Birds are usually infected at a young age, but may not show signs of disease until some months later. The virus that causes Marek's disease attacks the white blood cells of the bird, and results in cancer. These cancers most commonly affect the nerves and cause paralysis. Usually, the legs are affected, but the tumours may also affect the nerves in the wings and neck. Birds may also develop tumours in the body. As they grow, these tumours may cause a number of signs including weight loss, diarrhoea, ill thrift, and difficulty breathing.

A vaccine should be given to birds at one day of age. It is recommended that all birds should be vaccinated, even though the vaccine is not as effective as it used to be. This is due to the virus that causes the disease mutating slightly over time. Most large hatcheries vaccinate their chicks, so birds purchased from them should be protected, and vaccine is available at a reasonable cost for birds hatched privately.

### **Infectious Bursal Disease**

Infectious bursal disease is a highly contagious disease of young chickens (<17 weeks of age) in which the tissues of the immune system, and especially the bursa of Fabricius, are targeted resulting in immunosuppression and susceptibility to other infections, such as *E. coli*, *Salmonella*, *Mycoplasma*, coccidia, Marek's disease and others. The virus is very hardy, can survive in a wide variety of environmental conditions, and is difficult to effectively decontaminate. Usually, the first thing seen in a group of birds is a sudden increase in mortality (death loss). Clinical signs of affected birds can include depression and ruffling of feathers, poor or lack of appetite, huddling, unsteady gate, reluctance to rise, and diarrhea (sometimes bloody). Immunosuppressed survivors may be affected with other disease agents, resulting in various secondary infections that can end in death, or manifest as respiratory or gastrointestinal disease. The mode of transmission is primarily through the fecal-oral route. The primary focus for prevention and control should be on biosecurity of poultry premises. Rigorous cleaning and disinfection between flocks are essential for minimizing potential disease spread. Vaccination of birds should be done by consulting the local veterinarian.

### **Leucosis**

Avian leucosis is also a viral disease affecting chickens which causes tumours or cancers. These tumours occur in older birds than those affected by Marek's disease, usually more than 6 months old. It causes restlessness and loss of weight and the bird eventually dies. The viruses affect the white cells and tumours usually appear in the liver and spleen but also in other sites. Sometimes the tumour appears as white lumps, at other times the liver and spleen appear larger than normal. The viruses are transmitted through the egg and commercial producers attempt to eliminate it from their strains of birds.

Eradication of avian leukosis virus from primary breeding stocks is the most effective means to

control avian leukosis virus infection and lymphoid leukosis in chickens. Eggs from shedder hens are discarded, so that progeny flocks typically have reduced levels of infection. Thus far, vaccination for tumor prevention has not been promising.

### **Fowl Pox**

Another viral infection of birds is fowl pox. This disease is spread by biting insects and sometimes by fighting. The virus enters the body through a scratch or scrape, and raised scabs form on the scratch and surrounding areas particularly noticeable on the combs and wattles. Scabs can also form in the mouth and throat. Most cases improve without treatment, although some birds become ill from secondary infection. Birds that recover are immune for life.

Prevention is again the best idea, and vaccination in wing vein is available, although this may need to be done every few years to give complete protection.

### **Respiratory Disease**

There are many causes of respiratory disease in poultry. Respiratory signs such as coughing, sneezing and discharge from the eyes and nostrils can be caused by parasites (such as the gapeworm, *Syngamus trachea*), dust, high ammonia levels, or a variety of bacteria or viruses. In all cases, a veterinarian with experience in poultry disease must diagnose the exact cause, particularly if mortalities occur. Some of the respiratory viruses such as Infectious laryngotracheitis virus (ILT), Newcastle disease and avian influenza are noticeable or exotic diseases, and must be reported to a Government Veterinarian or Animal Health Officer if they are suspected. Treatment will depend on the cause of the respiratory signs. For some viral causes such as ILT, vaccination is recommended.

### **Nutritional Deficiencies**

Generally backyard poultry birds are scavengers. This is not sufficient to meet the nutritional demands of growing birds. Common deficiencies include

calcium (resulting in poor bone growth and rickets), energy (poor growth, weight loss, poor egg production) and vitamin A (poor skin and feathering). Formulated diets are available for all stages of a hen's life, (starter, grower and layer) and these should be fed to form a balanced diet.

### **Reproductive Problems**

Commercial birds are bred to lay for only one or two laying seasons. If they are sold to backyard producers for extended laying, they are prone to reproductive problems. This includes egg binding (where the egg is unable to be passed out of the bird), metritis (inflammation of the oviduct and shell gland), and yolk peritonitis (free yolk in the abdominal cavity, leading to infection). Affected birds stop laying eggs, are depressed, stop eating and eventually die. They often develop a swollen abdomen, and may have respiratory difficulties. Surgery by a veterinarian is possible to resolve these conditions, however, the surgery results in the bird being unable to lay eggs. Hence, it is reserved only for pet birds.

### **Conclusion**

Backyard poultry farming is a very lucrative enterprise. To improve the financial conditions of marginal and small farmers of India, backyard poultry is a great option as it provides cheap protein source and generate money in a very small time period in case of emergency. Hence farmers should be encouraged for backyard poultry by providing awareness and adoption of some scientific practices. Finally by knowing about diseases will help the farmers for early detection and treatment of diseased birds and they will be saved from economic losses.

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# Emerging and re-emerging diseases of poultry

Karam Chand and Sanchay K. Biswas

Division of Virology, ICAR-Indian Veterinary Research Institute, Mukteswar Campus

Poultry diseases are major economic and public health concern in India. As compared to specific pathogen, an emerging pathogen is a specific microbe that has been recognized earlier but the cause remained indistinct or it is a new disease that has not appeared in the past. With emerging and re-emerging disease evaluating their economic impact is essential to determine whether new control measures and particularly new vaccines are need. Globally the new emerging and re-emerging viral and bacterial diseases are Avian Influenza, Amyloid Arthropathy and *Ornithobacterium rhinotracheale* infections, Mycoplasmosis, Erysipelas, Necrotic Enteritis, and Chlamydiosis.

## Avian Influenza (AI)

Avian Influenza is a disease of poultry, wild and cage birds. Avian Influenza is caused by type A influenza virus which comes under family orthomyxoviridae. The virion is enveloped and genome is eight segmented ssRNA. Avian Influenza virus is divided on the basis of antigenic relationships in the surface glycoproteins haemagglutinin (HA) and Neuraminidase (NA) into subtypes. Currently, there are 16 H (H1-H16) subtypes and 9 N (N1-N9) subtypes are present. The segmented genome of influenza viruses leads to genetic reassortment and this causes genetic diversity for interspecies transmission to evade host immune responses by antigenic shift. The H2N2 influenza virus of 1957 pandemic arose through genetic reassortment, where human influenza A virus (H1N1) acquired genes from an avian virus. Wild and domestic waterfowl are natural reservoir host of influenza virus. The highly pathogenic avian influenza (HPAI) H5N1 virus responsible for panzootic in poultry is a key threat to animal and human health. In avian influenza viruses, HPAI

(H5N1) virus has to be considered a potentially severe pandemic threat. A few influenza virus subtypes found in aquatic birds have established themselves as low-pathogenicity avian influenza (LPAI) virus in terrestrial birds such as chicken, turkey, and quail (e.g., subtypes H9 and H6). Both human and avian influenza viruses have established constant virus lineages in pigs and pigs have been considered as mixing vessel for the generation of pandemic influenza virus through reassortment. Two subtypes of influenza A virus i.e. H5 and H7 are known as HPAI virus in terrestrial poultry like chicken and turkeys. From 1959 to 1990, worldwide there were nine HPAI virus outbreaks reported and these outbreaks were controlled by the "stamping out" of infected birds. Since 1990, there have been 10 further HPAI virus outbreaks, including in Asia. The present HPAI H5N1 virus outbreak is, however, distinctive in scale and geographic distribution. These viruses are panzootic, leading to massive economic losses and have transmitted to humans with fatal consequences.

The disease is transmitted by direct contact with infected bird or indirectly through contaminated equipments; crates egg flats, person's shoe, clothing etc. Since AI is maintained in the wild aquatic birds, it is difficult to eradicate the infection. However, every effort must be made to prevent direct contact of domestic poultry with wild aquatic birds. A vaccination programme in combination with strict quarantine should be made to control the mild form of disease in chicken and turkey flocks. However, in lethal form of disease strict quarantine and fast depopulation of infected flocks seems to be extremely successful method for controlling the disease.

## **Necrotic Enteritis (NE)**

Necrotic Enteritis is an acute disease caused by *Clostridium perfringens*. When it migrates from the large intestine and caeca to the small intestine, it produces toxins. Toxin type A or C leads to damaging of the intestinal lining and dysfunction of the intestinal tract predisposes the bird to infection. Intestinal stasis, intestinal distension, coccidiosis, salmonellosis, crop mycosis and haemorrhagic enteritis (HE) may predispose the birds to infection. The clinical signs appear rapidly; it seems that healthy birds may become acutely depressed and die within hours. The mortality rate is 2 to 10 %. Affected birds show ruffled feathers, marked depression, inappetance, tendency to huddle, watery droppings and diarrhoea.

A number of conditions are related with *Clostridium perfringens* infections such as Cholangiohepatitis and Dysbacteriosis. Cholangiohepatitis causes great economic losses because slaughtered carcasses are downgraded. *Clostridium perfringens* is frequently isolated in association with the disease. Dysbacteriosis is distinct as the presence of abnormal flora in the small intestine causing a clinical disorder and malabsorption. In broilers after 21 days of age, there is reduction in feed intake and wet faeces. Antibiotics such as penicillin, amoxicillin, ampicillin, erythromycin, dihydrostreptomycin and tetracycline are used for the treatment of disease and gives suitable clinical response. Recent investigations show that competitive exclusion can impact the incidence and severity of NE in poultry. In addition coccidiosis may be a contributing factor and consideration must be given to an effective control program.

## **Amyloid Arthropathy**

A clinically unidentified joint disease was recognized in heavy breed layers birds in Netherlands and France in 1992. Clinical signs were growth retardation, widespread amyloidosis

and amyloid arthropathy. Laboratory diagnosis resulted in isolation of *Enterococcus faecalis* and a reovirus. *E. faecalis* was the major pathogen identified from the joints of affected birds. Amyloid arthropathy was also identified sporadically in broiler and *Staphylococcus aureus* was isolated from those birds. The affected birds show stiff gait due to enlargement of the femorotibial joints in one or both legs and they are generally smaller in size. In some birds the tibiometatarsal joints are thickened. Rarely other microorganisms such as *St. aureus*, *Salmonella enteritidis* and *Escherichia coli* were also able to cause joint amyloidosis.

## ***Ornithobacterium rhinotracheale* infections**

Respiratory disease cause heavy economic losses in the poultry industry and respiratory disease with different clinical courses have been observed in poultry flocks. Laboratory diagnosis resulted in isolation of slowly growing, pleomorphic gram-negative rods and the bacterium was designated *Ornithobacterium rhinotracheale*. An *O. rhinotracheale* infection is an acute, highly contagious disease of chickens and turkeys. *O. rhinotracheale* has been isolated from chickens, partridges, ducks, geese, guinea fowl, gulls, ostriches, pheasants, pigeons, quail, rooks and turkeys. The severity of clinical signs, time of the disease and mortality are very variable and prejudiced by numerous environmental factors such as poor management, inadequate ventilation, high stocking density, poor litter conditions, poor hygiene, high ammonia level, concurrent diseases and the secondary infections. The disease spreads horizontally by direct and indirect contact.

At present 18 serotypes designated A to R of *O. rhinotracheale* are exist. The serotype of the *O. rhinotracheale* strains does not affect the pathogenicity and most of the poultry isolates belong to the serotype A. Turkey isolates are more diverse and belong to serotype A, B and D. On the basis of clinical sign and pathological lesions

diagnosis of *O. rhinotracheale* infection is often not easy as it can be confused with other infections. The confirmatory diagnosis of infection therefore must be carried out by isolation and identification of the causative agent. As different strains of *O. rhinotracheale* have variable susceptibilities to antibiotics, the treatment of infections is very difficult. The sensitivity to antibiotics depends on the source of the strain and the regularly used drugs in a region. Vaccination using autogenous bacterins effectively reduced the number of outbreaks of *O. rhinotracheale* infections in turkey flocks in the field.

### **Erysipelas**

Erysipelas is a bacterial disease caused by *Erysipelothrix Rhusiopathiae*. It was recognized as the etiologic agent of swine erysipelas more than 100 years ago. The disease is reported more commonly in turkey and sporadically in several species of poultry including chicken, duck, geese, pheasant and quail. The birds showed depression, ruffled feathers, somnolence and diarrhoea. Gross lesions consisted of generalized congestion of internal organs, haemorrhage on pericardial fat, in heart muscle and in abdominal fat as well as salpingitis, peritonitis and enteritis. The liver and spleen were enlarged with multiple large irregular zones of necrosis. Laboratory examinations of internal organs resulted in isolation of *Erysipelothrix rhusiopathiae* of serotype 1. Additionally *E. coli* and *Pasteurella multocida* were isolated from ovary and peritoneum. Treatment trials with penicillin were tried and birds can be vaccinated at 17 weeks of age against *E. rhusiopathiae* using inactivated vaccine containing serotype 1 and 2.

### **Chlamydiosis / Ornithosis**

*Chlamydophila psittaci* is known worldwide in most animal species and humans. Infected animal in spite of of clinical sign can shed Chlamydia and act as potential reservoirs of infection for humans

and poultry. In turkeys, it causes severe respiratory disease and latent infections are common. The infection is very prevalent among turkey flocks and is not always associated with respiratory diseases in order to that *C. psittaci* antigen and antibodies could be detected in healthy turkey and broiler flocks. On the basis of outer membrane protein 1 (omp 1) gene, avian *C. psittaci* strains are classified into 5 different serovars designated A to E and into 6 different genotypes designated A to F, respectively. The infection is transmitted horizontally by inhalation of infectious agent. In several countries any suspected cases of ornithosis in human as well as in commercial poultry should be reported to the authorities. The routine laboratory diagnostic methods cannot give information about the pathogenicity and the virulence of strains involved. The treatment of Chlamydiosis using chlortetracycline and/or enrofloxacin reduces shedding and mortality. Beside this general hygienic measures and governmental regulations reduce the spread of infection.

### **Avian mycoplasmosis**

Many species of mycoplasmas have been isolated from avian sources, however, two species of mycoplasma are known as mainly pathogenic to chickens and turkeys. *Mycoplasma gallisepticum* affects the respiratory system and is known as chronic respiratory disease (CRD) in chickens, and infectious sinusitis in turkeys. *Mycoplasma synoviae* may cause respiratory and joint diseases. Two other species are known to be pathogenic to turkeys. *Mycoplasma meleagridis* causes airsacculitis, and *Mycoplasma iowae* decreases hatchability. The disease is transmitted by vertical transmission via the infected eggs. Infected progeny transmit the Mycoplasma horizontally either by direct bird-to-bird contact or by indirect contact through contaminated utensils. The infection also spread mechanically to other species

of birds. The currently available diagnostic tests are not ideal for diagnosis of agent and some existing Mycoplasma field strains may not give rise to seroconversion. In addition, little is known about the susceptibility of recent Mycoplasma isolates to existing antibiotics.

### Conclusion

Viral and bacterial diseases in poultry are related with severe economic losses. Early detection and monitoring programmes are important in managing the infections and reducing the economic impact. Evaluation of economic impact of emerging and re-emerging diseases is essential to determine whether novel control measures and particularly next generation vaccines are needed. Usually, treatment or vaccination alone is of less value unless they are combined with improvements in management and biosecurity. In future, development of genetically resistant poultry breeds to some pathogens and further development of efficient vaccines against viral and bacterial pathogen may control the disease.

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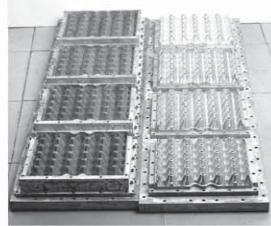
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Place	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Hyderabad	75	77	82	82	85	88	90	90	93	93	93	93	93	95	95	97	102	102	102	102	102	102	102	97	97	97	92	92	94	94	94
Karimnagar	75	77	82	82	85	88	90	90	90	93	93	93	93	95	95	97	102	102	102	102	102	102	102	97	97	97	92	92	94	94	94
Warangal	75	77	82	82	85	88	90	90	90	93	93	93	93	95	95	97	102	102	102	102	102	102	102	97	97	97	92	92	94	94	94
Mahaboobnagar	75	77	82	82	85	88	90	90	90	93	93	93	93	95	95	97	102	102	102	102	102	102	102	97	97	97	92	92	94	94	94
Kurnool	75	77	82	82	85	88	90	90	90	93	93	93	93	95	95	97	102	102	102	102	102	102	102	97	97	97	92	92	94	94	94
Vizag	64	66	66	68	68	68	68	68	71	76	76	78	81	84	84	86	88	88	88	88	88	88	88	83	83	83	85	85	87	87	87
Godavari	72	74	76	76	78	80	82	82	82	87	87	89	89	91	91	93	96	96	96	96	96	96	96	91	91	91	91	91	93	93	93
Vijayawada	76	78	81	81	87	86	88	88	89	91	91	93	93	95	95	97	100	100	100	100	100	100	100	96	96	96	96	96	96	96	96
Guntur	77	79	82	82	85	87	89	89	89	91	91	93	93	95	95	97	100	100	100	100	100	100	100	98	98	98	98	98	98	98	98
Ongole	78	81	83	83	86	88	90	90	90	93	93	93	95	95	97	97	99	102	102	102	102	102	102	98	98	98	98	98	98	98	98

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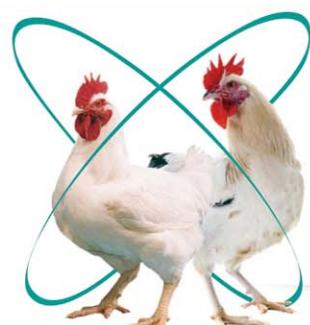
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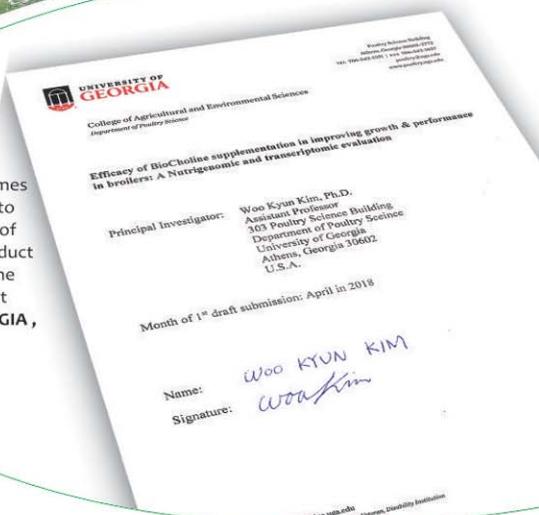
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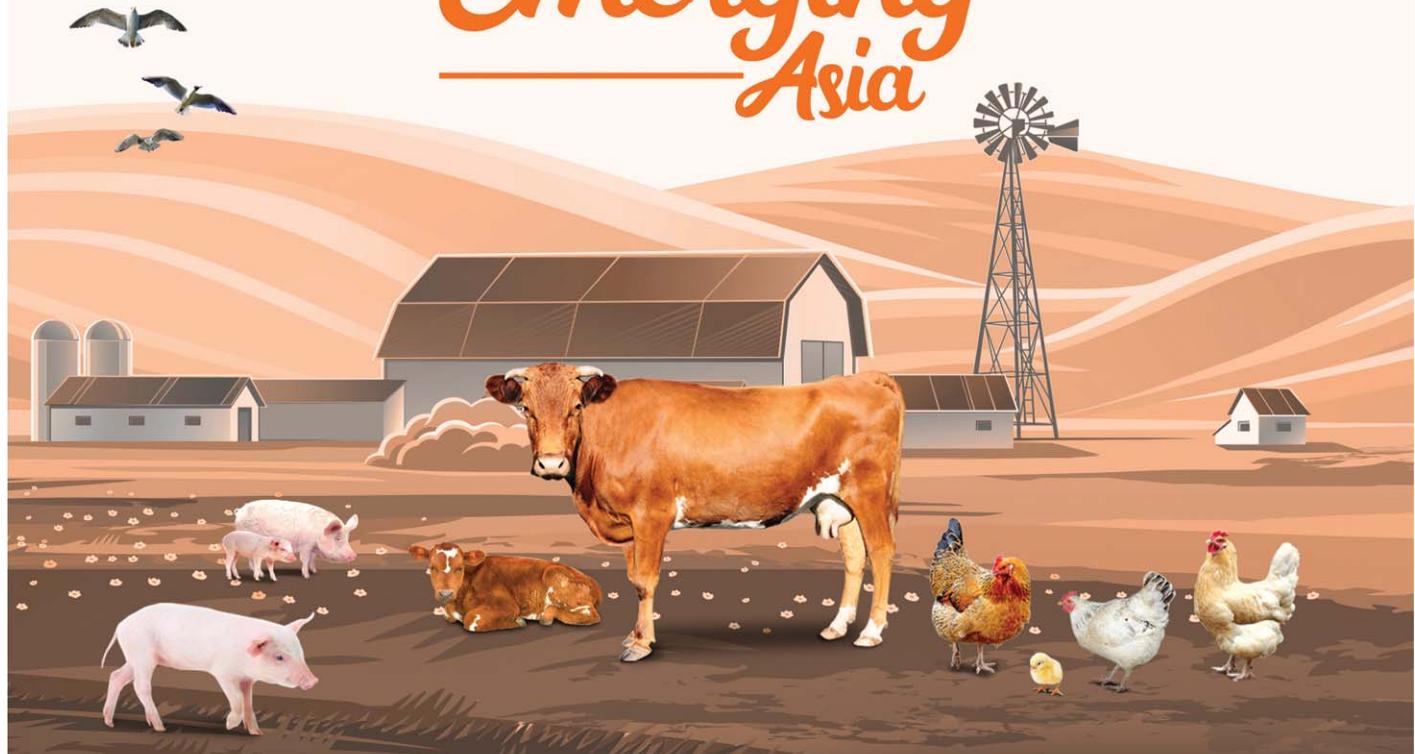


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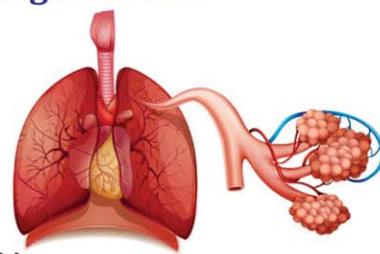
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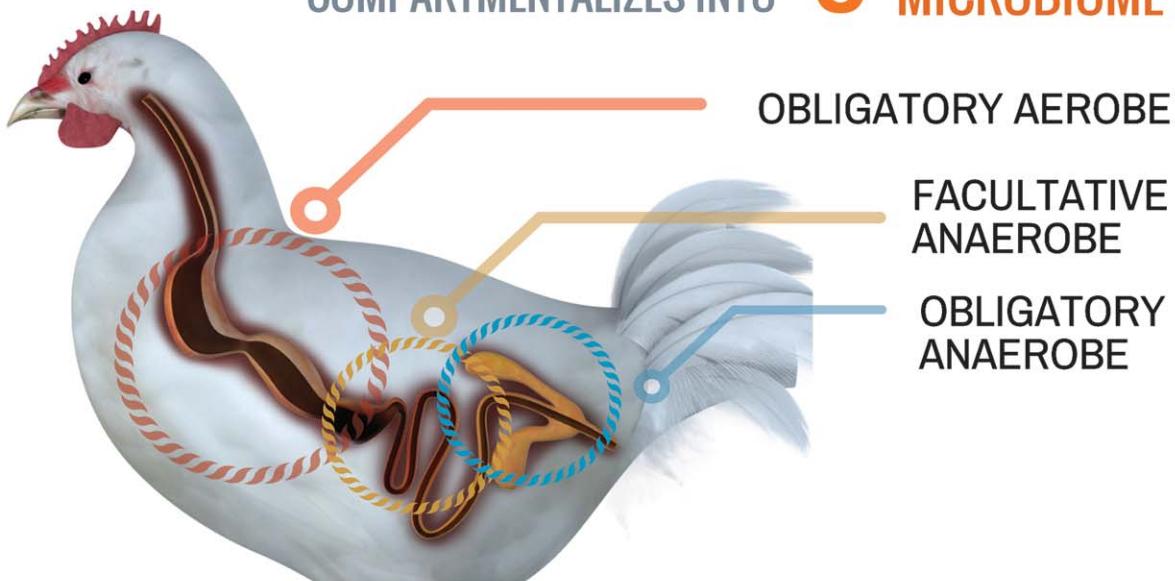
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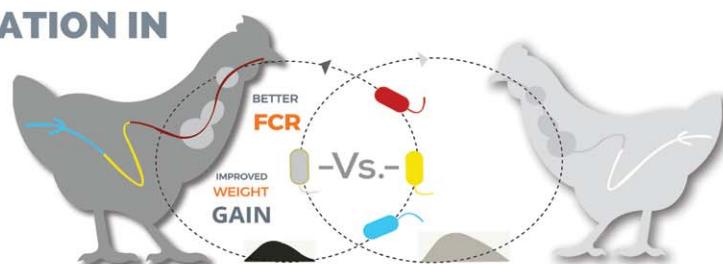
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## PRESS RELEASE

# Mycotoxin Crop Contamination Levels Are Vastly Underestimated According to Researchers

**Up to 80% of global agricultural crops are contaminated by mycotoxins**

By Christiane Gruber-Dorninger

According to a frequently cited estimate ascribed to FAO, 25% of the world's agricultural crops are contaminated with mycotoxins. However, the source of this estimate has been lost over time and more recent data indicates that global mycotoxin occurrence in crops is far higher.

### New mycotoxin research

In a 2019 study published in "Critical Reviews in Food Science and Nutrition", a renowned group of researchers, including Dr. Mari Eskola and Prof. Rudolf Krska from IFA-Tulln (BOKU University, Austria), evaluated the validity of this 25% estimate.

The authors concluded that this oft-cited figure greatly underestimates global mycotoxin occurrences, noting that "to best of our knowledge, it seems that there is no accurate published reference available for the figure of 25% world's food crop mycotoxin-contaminated. Nor there is any information on which dataset this estimate was based on or how it was calculated."

Through examining published global mycotoxin occurrence data and analyzing large datasets of mycotoxin concentrations in agricultural commodities, including a dataset derived from the **BIOMIN Mycotoxin Survey**, they determined that 60% to 80% of crops are likely to be contaminated by mycotoxins.

### Worldwide contamination of food-crops with mycotoxins:

Validity of the widely cited 'FAO estimate' of 25%." Eskola M., Kos G., Elliott C.T., Hajšlová J., Mayar S., Krska R., Critical Reviews in Food Science and Nutrition, 2019.

**A renowned group of researchers determined that 60% to 80% of crops are likely to be contaminated by mycotoxins.**

### Additional research supports the 80% occurrence figure

In another study published in the scientific journal "Toxins", I and other BIOMIN researchers analyzed mycotoxin occurrence in 74,821 feed samples collected from 100 countries over a ten-year period (2008 – 2017), making this the largest and most comprehensive global survey of mycotoxin occurrence in feed published to date.

In our research, we found that mycotoxins were present in the vast majority of the samples (88% of samples contained at least one mycotoxin) and that co-occurrence of mycotoxins was very common (64% of samples contained at least two mycotoxins).



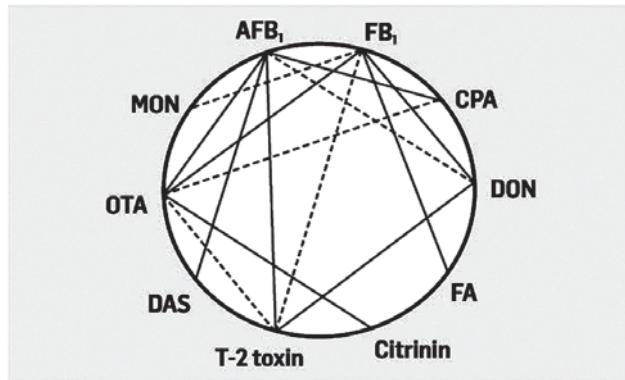
For each region, countries of sample origin are labeled in the map using a distinct color. The legend indicates percentage of positive samples and median of positive samples for each mycotoxin in each region. Each row represents one region and is labeled using the distinct color corresponding to the respective region in the map. n-sample number; AFB1—aflatoxin B1; DON—deoxynivalenol; ZEN—zearalenone; FUM—fumonisins (sum of fumonisins B1, B2, and B3); OTA—ochratoxin A; T-2—T-2 toxin.

	ABF1	FUM	ZEN	DON	OTA	T-2
<b>Northern Europe (n = 1,958)</b>	5.9% 3.1 µg/kg	22.4% 186 µg/kg	28.9% 35 µg/kg	74.2% 504 µg/kg	8.1% 1.9 µg/kg	30.3% 34 µg/kg
<b>Central Europe (n = 21,036)</b>	12.7% 1.6 µg/kg	43.2% 187 µg/kg	45% 40 µg/kg	69.8% 428 µg/kg	11.9% 2.8 µg/kg	30.7% 11 µg/kg
<b>Southern Europe (n = 3,527)</b>	28.9% 2.1 µg/kg	74.9% 607 µg/kg	36.3% 44 µg/kg	52.9% 324 µg/kg	21.2% 2.6 µg/kg	11.7% 25 µg/kg
<b>Eastern Europe (n = 2,382)</b>	17.0% 3.4 µg/kg	33.6% 87 µg/kg	42.5% 15 µg/kg	59.9% 153 µg/kg	36.4% 3.6 µg/kg	48.2% 21 µg/kg
<b>North America (n = 5,471)</b>	10.5% 8.7 µg/kg	47.7% 652 µg/kg	31.7% 102 µg/kg	64.1% 505 µg/kg	4.3% 2.4 µg/kg	3.9% 29 µg/kg
<b>Central America (n = 367)</b>	8.6% 3.9 µg/kg	81.8% 929 µg/kg	38.2% 60 µg/kg	70.0% 316 µg/kg	3.8% 2.5 µg/kg	4.1% 3.1 µg/kg
<b>South America (n = 17,332)</b>	23.5% 3.2 µg/kg	75.3% 1,390 µg/kg	46.9% 51 µg/kg	26.9% 344 µg/kg	4.9% 17 µg/kg	21.5% 31 µg/kg
<b>Middle East/North Africa (n = 1,075)</b>	22.2% 2.4 µg/kg	66.8% 347 µg/kg	44.8% 31 µg/kg	47.8% 236 µg/kg	20.3% 3.1 µg/kg	8.5% 14 µg/kg
<b>Sub-Saharan Africa (n = 208)</b>	76.0% 23 µg/kg	72.6% 789 µg/kg	52.2% 38 µg/kg	49.5% 352 µg/kg	31.9% 7.2 µg/kg	3.0% 3.0 µg/kg
<b>South Africa (n = 1,077)</b>	9.0% 2.2 µg/kg	62.6% 266 µg/kg	41.6% 30 µg/kg	63.2% 363 µg/kg	5.6% 2.2 µg/kg	1.2% 4.4 µg/kg
<b>Oceania (n = 1,695)</b>	11.3% 2.0 µg/kg	22.2% 106 µg/kg	21.5% 105 µg/kg	34.5% 158 µg/kg	7.5% 3.6 µg/kg	2.0% 16 µg/kg
<b>South Asia (n = 1,136)</b>	82.2% 20 µg/kg	69.0% 288 µg/kg	19.6% 37 µg/kg	23.1% 96 µg/kg	60.4% 4.6 µg/kg	0.9% 13 µg/kg
<b>Southeast Asia (n = 4,310)</b>	57.4% 10 µg/kg	69.6% 573 µg/kg	45.9% 43 µg/kg	42.5% 137 µg/kg	15.2% 3.0 µg/kg	2.7% 26 µg/kg
<b>East Asia (n = 13,232)</b>	17.1% 10 µg/kg	60.7% 810 µg/kg	58.2% 90 µg/kg	84.8% 418 µg/kg	14.1% 2.9 µg/kg	11.0% 16 µg/kg
<b>Central Asia (n = 15)</b>	7.7% 1.4 µg/kg	25.0% 13 µg/kg	23.1% 1.5 µg/kg	26.7% 28 µg/kg	13.3% 22 µg/kg	6.7% 25 µg/kg

### Beware of mycotoxin 'cocktails':

Some of the most frequently detected mycotoxin combinations (e.g. deoxynivalenol and zearalenone, or aflatoxins and fumonisins) may exert additive or synergistic effects according to published studies

Synergistic effects of mycotoxins in poultry



FB<sub>1</sub> = Fumonisin B<sub>1</sub>, CPA = Cyclopiazonic acid, DON = Deoxynivalenol, FA = Fusaric acid, DAS = Diacetoxyscirpenol, OTA = Ochratoxin A, MON = Moniliformin, AFB<sub>1</sub> = Aflatoxin B<sub>1</sub>

Source: BIOMIN

### Regional variation in mycotoxins

According to the study, each geographic region showed a distinct mycotoxin occurrence pattern governed by climate and other factors, indicating that each region faces its own challenges with respect to mycotoxin contamination of feed.

For example, significant fractions of samples from South Asia, Sub-Saharan Africa and Southeast

Asia exceeded the European Union maximum level for aflatoxin B<sub>1</sub>, indicating a potential threat to animal production.

In several regions, mycotoxin concentrations in corn varied substantially from year to year, a variation partly explained by temperature or rainfall during flowering or in the lead-up to harvest.

These results suggest that extreme weather conditions during sensitive periods of grain development may lead to mycotoxin contamination levels

far in excess of levels typically observed in a given region.

### An updated perspective on mycotoxins

Results of large-scale global surveys indicate that mycotoxins contaminate up to 80% of global feedstuffs, and mycotoxin occurrence shows regional trends governed in part by climate and weather. Furthermore, mycotoxin co-occurrence is very common and co-occurring mycotoxins may exert combined toxic effects.

These results highlight the need for the application of good agricultural practices, regular testing of feed for mycotoxins, and protection of farm animals from adverse effects of mycotoxins by the application of mycotoxin deactivating feed additives.

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## Vamso Biotec Participated in South Asia's Biggest International Poultry Exhibition

Vamso Biotec Pvt Ltd, committed for upliftment of poultry health & productivity, successfully participated in South Asia's Biggest International Poultry Exhibition- Poultry India 2019, Hyderabad, from 27-29 November, 2019. Professional association, international networking and experts' knowledge sharing about poultry industry were the foundations of this top event.

It received astounding response from nutritionists, feed millers, integrators & farmers. Vamso Biotec, marked its 50<sup>th</sup> anniversary this year in providing herbal & phytochemical sustainable solutions in animal healthcare industry. "We aims at optimizing feed cost through nutritional intervention in challenging period for profitable poultry production", said Dr. Ashwani Jadaun, Business Head, Vamso Biotec.

Poultry India Exhibition features the most innovative and reputed companies across the continent from the poultry sector to showcase their businesses and interact with potential partners, clients and investors. Poultry India has continued its efforts every year to bring new businesses in technologies, poultry nutrition and animal health from all around the world to India.

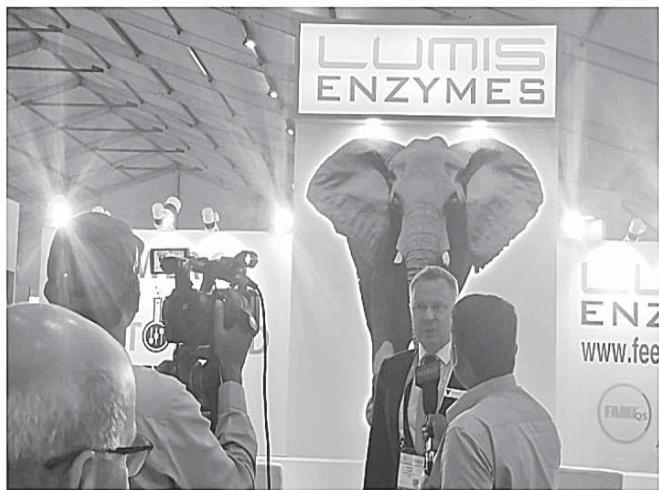
In five decades, Vamso Biotec has established a strong footprint in Indian as well as International poultry & livestock market. Vamso envisages of becoming an exemplar by providing effective research based innovative solutions to the customers.



**About Vamso Biotec:** Vamso Biotec Pvt. Ltd. is an ISO 9001:2000 & GMP certified; research and technology oriented veterinary pharmaceutical company in India. Vamso Biotec has emerged as a leading player in natural, biotechnology and feed supplement products useful for health and productivity needs of variety of animal species. The company provides unmatched customer service through a fleet of sales, marketing and technical team. The company has left no stone unturned to bring out the best of the products through its state of the art machinery and finest infrastructure.

# LUMIS ENZYMES

## EXHIBITED IN POULTRY INDIA, HYDERABAD



# LUMIS ENZYMES

## EXHIBITED IN POULTRY INDIA, HYDERABAD



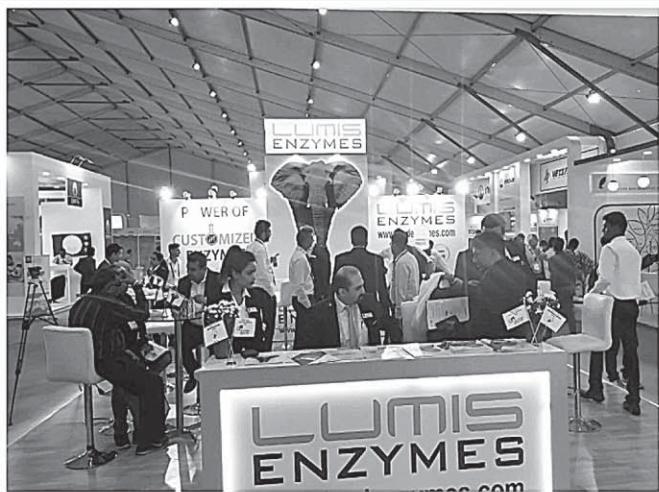
# LUMIS ENZYMES

## EXHIBITED IN POULTRY INDIA, HYDERABAD



# LUMIS ENZYMES

## EXHIBITED IN POULTRY INDIA, HYDERABAD



## Rossari AHN Poultry India 2019 Expo Participation



Rossari Biotech Limited (AHN Division) participated in Poultry India, 2019, Hyderabad, from 27<sup>th</sup> to 29<sup>th</sup> November 2019. Rossari's stall was visited by over a 100 stakeholders of poultry industry from India & other countries (feed millers, integrators, veterinarians, distributors etc.)

At the event, Rossari AHN exhibited its excellent R&D and manufacturing capabilities along with the strength of its core technical services. Rossari AHN's technical team shared information on its result oriented products & customized solutions to take care of the healthcare & management

challenges faced in poultry farming operations. Rossari AHN as well exhibited its new pet venture of natural pet cosmetic range - Lozalo during this expo, which was well appreciated by several expo participants from various countries & was shown interest to work along with the existing poultry portfolio of Rossari AHN

This exposition was a tremendous success for Rossari, owing to the high footfall of business stakeholders, which made it possible for us to showcase our latest innovations to the right assemblage.



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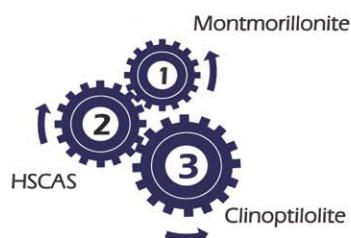
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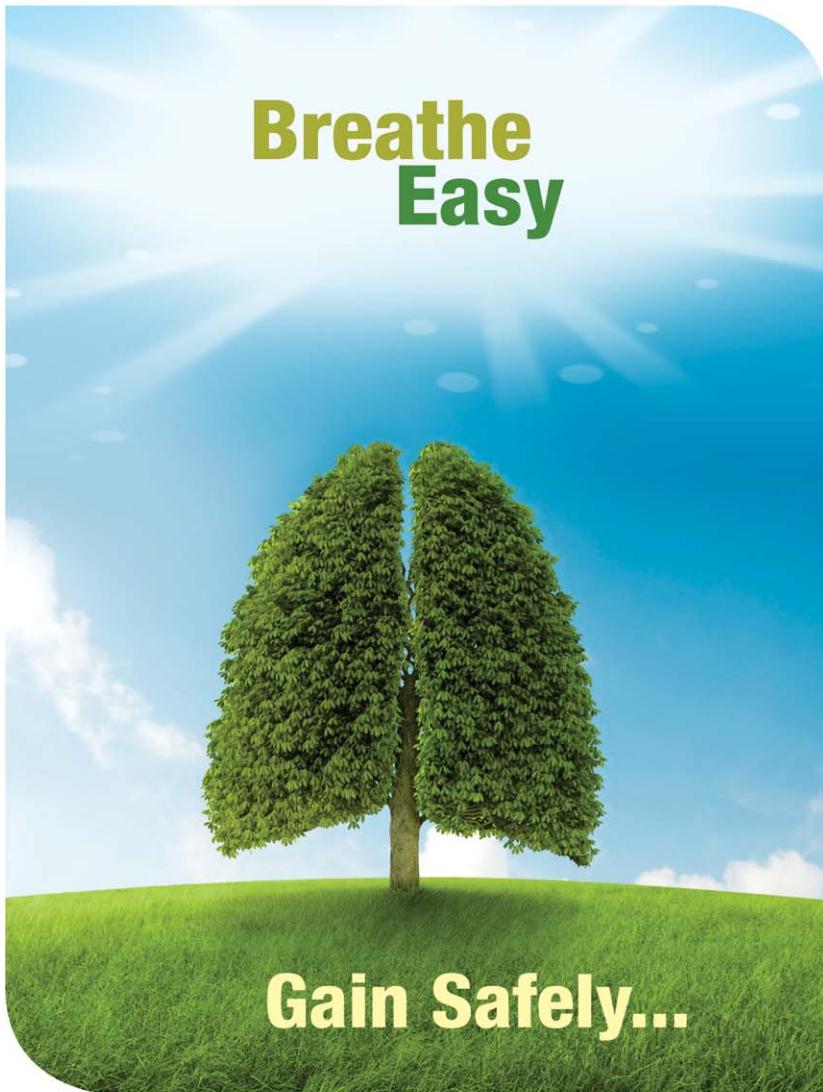
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# How to Start Poultry Farming in India



Poultry is the method of raising various domestic birds like chicken, for their eggs or meat. This has been practiced in India for such a long time that it has become an indispensable part of the farming and agriculture system. Since the 1950s poultry farming in India has changed tremendously. From being an unorganized and non-scientific system it has transformed itself to a more systematic, planned, scientific, commercial and organized farming practice. From being a backyard farming practice it is now full-fledged techno-commercial industry. Globally, India ranks third in the world in egg production and fifth in the world in chicken meat production. Although the production is mainly achieved through commercial means, the rural poultry sector also contributes significantly to the Indian poultry industry. It is looked upon as a reliable economic and nutritional source.

## **Basic Requirement of Poultry Farming**

For a successful poultry management the checklist includes proper site selection, site building, chalking the rearing plan, proper knowledge of using the equipment, procuring the various quality inputs from different resources, managing the day to day poultry affairs, constructing the houses and managing the timely marketing.

## **Choosing Poultry Farm Site**

The farm site must be away from the chaos and hustle-bustle of the city. It should be calm and pollution free environment. The farm must have adequate, clean and fresh drinking water sources nearby. Also the site must be free of poultry enemies and predators like foxes and leopards. The site must be easily accessible from main roads. In other words,

transportation must be easy and not very difficult. The local markets must also be easily accessible.

## **Housing for Poultry Farming**

Poultry shelters are the next important factor after farm sites in poultry rearing. The shelters must be raised adequately to prevent the risk of flooding. It should be spacious enough to permit free movement and running of the birds. In addition the shelter must be adequately ventilated and protected from sunlight. It is advisable to construct the shelters in a south facing direction. In this way, the birds are not only protected from the harsh sunlight but also permit circulation of fresh, clean air. There should be adequate drainage facilities in the shelter. Also if there is more than one shelter then the distance between two of them must be at least 50 feet. This would ensure proper ventilation and non-accumulation of ammonia inside the shelters. The entrances in the shelter must be fastened properly. Also there should be fencing around the shelter to secure the birds. The shelter design however depends on the breed of poultry, type of production, etc.

## **Feed**

For commercial poultry production, good quality, highly nutritious food is a must. The rate of productivity in birds is very high. They very quickly

convert their feed into food products. On a regular basis, they need about 38 nutrients in adequate amounts for their regular diet pattern. The feed can be given in different forms like crumbles, mash or pellets. Mash is the most economical, commonly used and easy to prepare feed. Pellets are prepared by subjecting the mash feed to heat treatment under pressure. As a result the pathogens in the feed are destroyed. This enables the birds to digest the feed and also minimize the wastage. Crumbles are the expensive form of feed wherein the pellets are broken down to granules. In addition to providing the birds with feed they must be given ample amount of clean and fresh drinking water.

### **Types of Poultry Farming in India**

#### **Broiler Poultry Farming**

Broiler segment in poultry is one of the fastest growing segments in recent times. It is the tender, young meat of male or female chicken. It's weight ranges from 40 grams to 1.5 Kg and it can be maximum six weeks old. India produces 2.47 million metric tonnes of broiler making it the fifth largest broiler producer in the world. This growth is mainly due to the interposition of the corporate sector that threw emphasis on scientific rearing of broilers. Owing to the considerable growth, farmers have access to high quality chicks, professional guidance, medicines and vaccines, sophisticated equipment, etc.

#### **Layer Poultry Farming**

Layer poultry means raising birds specifically for egg-laying purposes. In other words, special hen species are reared for commercial egg production. They start laying eggs once they are 18 weeks old and go on laying eggs till they are 78 weeks of age. During this period they produce 1 Kg of eggs for every 2.25 Kg of food consumed. Globally India is the third largest producer of eggs in the world. As per statistics, the current egg production is far below the ICMR recommended 180 eggs per capita annually.

#### **Country Chicken Farming**

Country chicken or free range chicken is rearing poultry breeds indigenous to India. In other words, they are local breed of chicken found in a particular

geographical location. India is the fifth largest chicken producer of which commercial poultry breeds are a major harvest. However country chicken also makes significant contribution. The main advantage of country chicken is that the birds are comparatively more resistant to infections and have a better survival rate. They adapt to new surroundings easily. They have a good egg production capacity and the input cost is negligible.

#### **Disease Management in Poultry Farming**

More than 60% of the total diseases and pathogens in the world originate from animals- wild or domestic. Zoonotic pathogens are transmitted to humans via food or through direct contact between humans and animals. Diseases are the main threat to poultry farming. Farmers face severe losses due to spread of various poultry diseases. One of the best ways to prevent development and spread of diseases is to take good care of the birds. The shelters must be cleaned regularly. The water and food containers must be washed regularly. Precautions must be taken to not mix contaminated food with regular food. The birds must be regularly checked for development of disease symptoms. Vaccination schedules must be properly followed. If any infection is detected then the diseased bird must be immediately separated from other healthy birds to check the spread of infection.

#### **Profitability in Poultry Farming in India**

Poultry farming in India is a profitable business owing to many reasons. One of the chief reasons is that unlike agriculture, this is not dependent on rain, sunlight or other weather factors. The investment required here is lower. Initially it can be started with a very small flock of birds and then built up progressively. Since it is not weather and geographical conditions dependent there is always a promise of yield and returns.

#### **Conclusion**

Poultry farming in India is good way to start agriculture since it require less space. The birds are capable of increasing the soil fertility which is an important factor for cultivation. In addition, the poultry waste is useful for organic agriculture and has demand in market.

Courtesy: [poultryindia.co.in](http://poultryindia.co.in)

## PRESS RELEASE



**Dr. D.K. Dey**



The **Optima Life Sciences** Managing Director, Mr. Vinay Kulkarni along with the team is pleased to announce the appointment of Dr. D.K. Dey as the new Chief Executive Officer (CEO) of the company. Dr. Dey is inducted as a whole time CEO of the company on Dec 18<sup>th</sup>, 2019.

Dr. Dey brings decades of experience to the company and has a proven record of taking customers & employee centric Animal Health companies to the next level. He has worked closely with the leaders of animal health industry in building breakthrough solutions for the animal health care sector. He holds a BVSc & AH Degree from BCKV Agriculture University, West Bengal and professional certification into Business Leadership from Singapore.

Commenting on his appointment, Dr. Dey said, "I am honored to lead **OPTIMA LIFE SCIENCES**, a young and dynamic company in animal health care business. I look forward to working with the teams on our vision "**Think Global, Act Local**". We at **OPTIMA** have a unique opportunity to deliver breakthrough solutions to the industry that will bring greater value to our customers and other stakeholders.

**"I am glad to be a part of enthusiastic Team Optima".**

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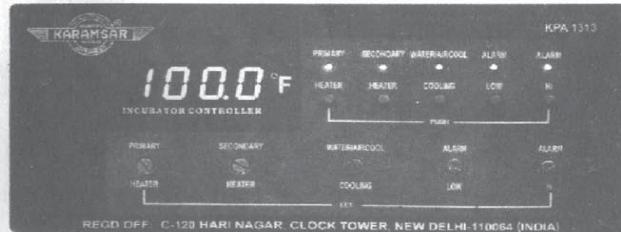
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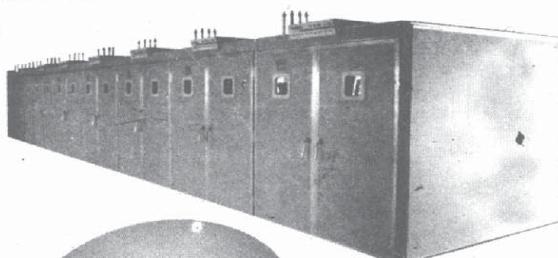
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# GLIMPSE OF POULTRY INDIA EXHIBITION 2019, AT HYDERABAD



Inauguration of Optima stall by the well-known delegates of Poultry Industry - Dr. Dibyendu Dey, Dr. Sarvanan followed by Mr. Vinay Kulkarni - Optima Director & other employees of Optima.



Mr. Vinay Kulkarni giving an overview on Effect of Egg shell colour on Early Mortality.



Mr. Amal Verma showing & describing to customers about the Egg shell quality of chicks.



Delegates taking selfies & photographs with Optima Mascot.



Team Optima at Poultry India Exhibition 2019

## EVERLASTING MEMORIES AT POULTRY INDIA EXHIBITION – 2019



## Fleshing Important in Optimal Broiler Breeding



At 12 weeks the frame size of broiler breeders is over 90% complete. From that moment the body condition or fleshing should gradually increase. To really know if the birds have the right fleshing, the birds have to be handled. The more birds that are handled at different ages, the better the condition of the birds will be understood.

Over the last few years broiler genetics have advanced, particularly in feed conversion, daily weight gain and meat yield. On the other hand, for broiler breeders to produce a lot of hatching eggs weight gain needs to be controlled to optimize performance. In rearing, both body weight and uniformity are often monitored; these characteristics are vital to achieve good peak production and consistency.

Another important tool used more and more is the monitoring of the development of fleshing. The birds have to be well prepared in rearing so they have, at the right age, the correct body conformation with enough fat reserves at the moment of light stimulation. The transition from pullet to a highly productive female involves a change in how energy is proportioned between skeletal growth, muscle deposition, fat deposition and development of reproductive organs for egg production.

This article describes how to prepare the pullet at the right moment for light stimulation. Rearing has four important periods. Frame size and uniformity are determined for most of the flock's life from day one to week eight. From there until week 12 is the

time for a controlled feeding program. Puberty begins as of 12 weeks and the flock should start to slowly increase fleshing and overall condition. In the weeks 16-20 the flock needs to accelerate growth rate to prepare for sexual development and achieve proper uniformity and fleshing.

### Uniformity and Early Development

The first priority is to get good carcass uniformity. When this is achieved in the first eight weeks of life, it is easier to bring all the birds in the right condition, with the correct amount of fleshing and be able to stimulate the whole flock with light stimulation.

The first seven days after placement are critical to achieve good uniformity. Enough feeding space and easy access to water should be provided for the chicks with the correct ambient temperature. Then 48 hours after placement a minimum of 95% of the chicks should have their crops filled with water and feed.

One method to obtain good uniformity is to place the birds at three weeks into three groups. Take one group of average birds, one group of small birds and one group of heavy birds. Feed the birds the necessary amount of feed so that all birds have the same bodyweight at eight weeks. Keep the birds separate in rearing and production if possible.

The smaller birds are in general the slower eating birds and the heavier birds are the fast eaters. It has been noticed with mash feed that the smaller birds eat for 30 minutes longer on the same amount of feed than the heavier birds.

The uniformity should increase during flock life – and never decrease. Uniformity should be a minimum of 70% (+/- 10). When this level of uniformity is not achieved, a second grading is recommended. To maintain good uniformity, the distribution of the feed is critical. It should be distributed within three minutes.

A good practical solution is to provide the first feed with a pan feeder system or a chain system in the

dark, or use the signal light feeding method to get good, fast feed distribution. Signal light feeding teaches the birds to relate feed distribution with a sign. The learning process starts on week three when feed restriction starts.

The house lights are switched on about 30 minutes before feeding time and the farmer goes round to check if everything is OK. The lights are then switched off for one minute; and then the signal light bulb at the end of the house is switched on for one minute – this is the signal. The feeders start and after the feed is distributed the house lights are switched on.

### **Development of Fleshing**

What do we mean with the term 'fleshing'? This is an indication of how much muscle is developed on the breast and wings. Proper fleshing plays a role in the ability of a hen to lay a high number of eggs. The birds have to build up enough fleshing to deposit fat in the period from 18-21 weeks of age.

Pullets have, in the rearing period, different fleshing conformation over time (Table 1). Until four weeks of age, we would like to see pullets with a more rounded shape of breast; this we call a Fleshing 4 (Table 1). In the maintenance period, the body conformation should change to a Fleshing 2. In this period the breast muscle should not be prominent. From 12 weeks onwards the fleshing on the birds should gradually increase so they have a fleshing of 2-3 at 16 weeks, and 3-4 at 20 weeks.

### **Method of fleshing**

To make the right decision during the different periods of rearing, an accurate assessment of fleshing is important to validate what decisions you make as a breeder manager. How should this be done? A representative sample of the flock in the house should be collected. The fleshing evaluation should be done at a representative place in the house, for example in the middle of the house or at one end. When the birds are sampled close to where the feed enters the house, you normally catch the more well-fleshed birds. The fleshing should be done with a catchpen.

The minimum number of birds is 50 per house. Each bird should be evaluated and given a fleshing

score according to Table 1. After the fleshing is done, you should calculate the percentage of the birds in each fleshing group. A good practice is to do this together with bird weighing.

### **How to achieve a good fleshing**

At 12 weeks the frame size of the bird is over 90% complete. From that moment the body condition or fleshing should gradually increase. Just to monitor the body weight is not enough. Over time more management items have been added to regular evaluation of the flock. From only using body weight, fleshing and later pelvic or vein fat, we now also use feather drop in the wings to see if bird development is on track. The reason is that the body weight curve has changed little over time, but genetic potential has been increased year on year. If there is excessive restriction, the feed intake will be limited, which could result in insufficient intake of amino acids, energy and vitamins and minerals with a negative effect on the development of the adult feathers and fleshing conditions and at the end of the rearing also a delay in fat deposition. The carcass size has a big influence on the body weight composition.

Where there are two birds with the same body weight but different carcass size, the smaller bird will normally have more fleshing. To know if the birds have the right fleshing, the birds have to be handled. This should be done at several ages of the rearing flock, with the best ages 12, 16, 19 and 21 weeks. The more birds handled at different ages, the better the condition of the birds will be understood.

The table is only a guide but indicates the importance of starting early (12 weeks) to evaluate the pullets and determine if the flock is on target from the beginning. The female's body composition at lighting is just as important as the bird's body weight, which means that the hen must have adequate fat reserve and fleshing at this point. Birds normally lay down fleshing quite easily between 16 and 20 weeks, however this is not the case with building fat reserve. It has been reported by different researchers that the abdominal fat content in broiler breeders has decreased during the past 20 years from 3.3 to 0.5%.

Enough protein and energy intake in the first 10 to 12 weeks is important for the proper body conformation at light stimulation. Feed formulations have to be considered in relation to body weight and feeding curves. Nutritionists do not often get enough time to go into the field to check fleshing and feathering and general condition of the bird and to see how their feed is working out.

The field managers need to become an important link between field situation and the feed mill or nutritionists. Try to avoid having a high percentage of birds in low condition with fleshing #2 at 12 weeks of age because these birds are impacted more by oil vaccinations around 12 weeks of age, and normally are still behind in development at 16 weeks of age. To build an adequate amount of fat deposition, the female must have sufficient weight gains in this critical 16 to 20 week period. A good management tool is to have a 33% to 38% increase in female bodyweight during this period. Birds that

are then overweight should never be brought back to the standard weight at 20 weeks. If a pullet is 100 g overweight at 16 weeks, it should also be 100 g overweight at 20 weeks.

**Light stimulation:** Birds should be light stimulated only when they have enough condition and fat reserves. At the moment of light stimulation we like to see that the birds meet the criteria of an average BW of 2.4 kg, more than 95% of the birds should have a condition of #3 + #4 (majority in #3) and 90% or more of the birds should have fat on the pelvic bone or show some vein fat. If the females are not ready for light stimulation, this should be delayed for one week. Tables 2 and 3 are two different field examples, which were evaluated at 21 weeks. The flock in Table 2 was delayed for one week with light stimulation so the birds had the right condition and enough fat on the pelvic bones. The flock in Table 2 had reached peak production of 86.7% and Table 3 reached 88.2%.

## Free Lance Poultry Consultant

DR.MANOJ SHUKLA, a renowned poultry Veterinarian, with 20 years of enriched field experience, now started Free Lance Poultry Consultancy. In the past 20 years have contributed to the development of the hatcheries in various capacities of leading companies across India - Maharashtra, Gujarat, Madhya Pradesh, Chhattisgarh, Orissa, Bihar, West Bengal, Jharkhand, North-East, Uttar Pradesh and neighbouring country of Nepal.



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He can be Contacted at:- **Dr. Manoj Shukla**

A-1, Gaytri Nagar, Phase-II, P.O. Shankar Nagar, Raipur, Chhattisgarh-492007

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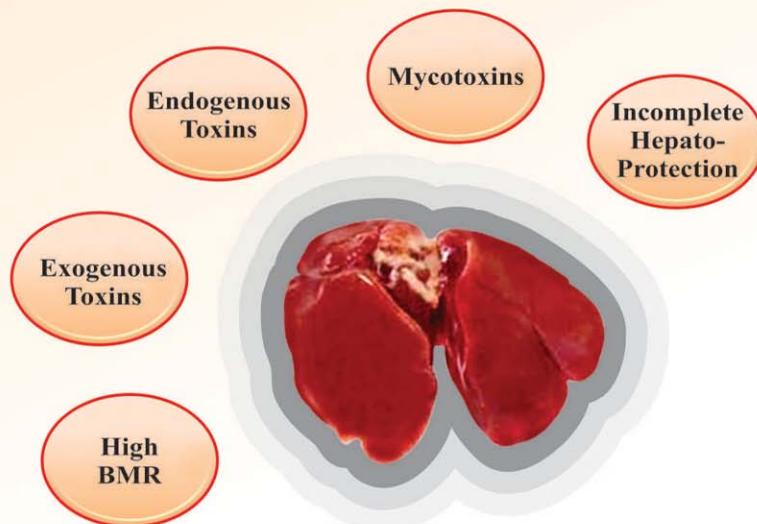


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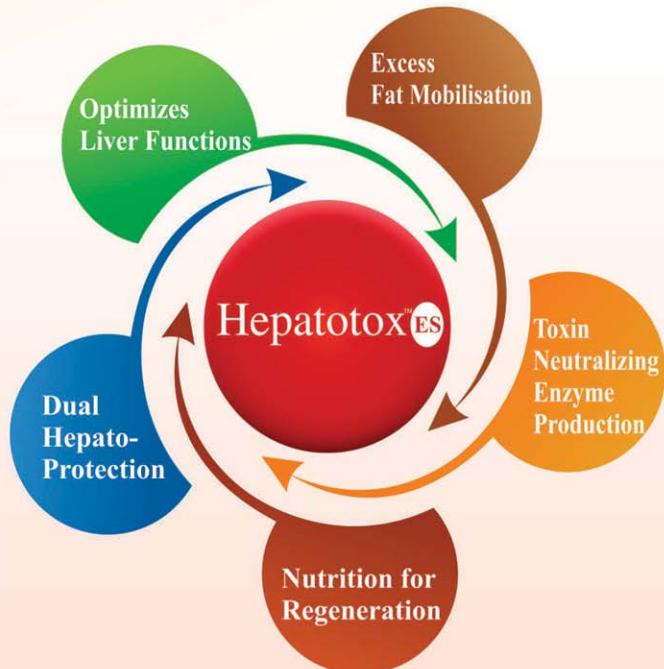
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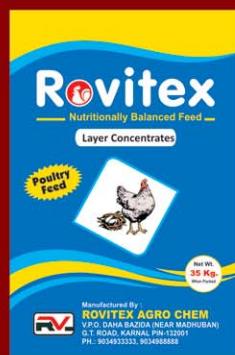
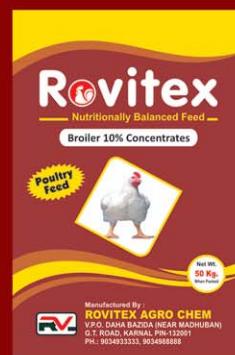
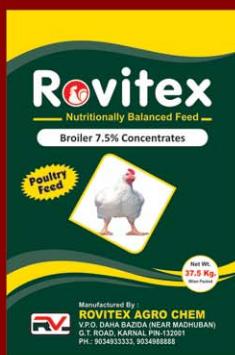
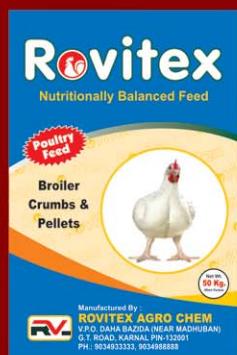
- ❖ Broiler 10% Concentrates
- ❖ Broiler 7.5% Concentrates
- ❖ Broiler 5.5% Concentrates
- ❖ Broiler 3.5% Concentrates
- ❖ Broiler 2.5% Concentrates
- ❖ Broiler 1.5% Concentrates

#### Layer Concentrates:

- ❖ Layer 5% Concentrates
- ❖ Layer 10% Concentrates
- ❖ Layer 25% Concentrates
- ❖ Layer 35% Concentrates

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## PRESS RELEASE

# IBC & LIPTOSA –Beginning of a New Relationship

Vinod Kumar Sambrani, Vice President (Marketing & Sales), Indo BiocarePvt. Ltd (IBC), VADODARA



INDO BIOCARE PVT. LTD (**IBC**), has recently signed an Agreement with LIPIDOS TOLEDO S.A, (**LIPTOSA**) to exclusively market their range of Natural Products for the Poultry segment in India.

Founded in 1994, **LIPTOSA**, is a Spanish Bio technology company, based on their philosophy of “Green way of Life” is dedicated towards developing Natural Products for use in various Animal segments. Presently, their Products are sold in almost 60 Countries and include, Poultry, Large Animals, Companion animals, Aqua culture, Avi culture, etc.

INDO BIOCARE PVT. LTD (**IBC**), headquartered at Vadodara, Gujarat began its journey 20 years ago with the principal focus of Professionalising Animal Health distribution in India.

Headed by Dr T.G. Chandramohan, IBC has the privilege of introducing range of Products from ELANCO, BAYER & LOHMANN until BAYER & LOHMANN decided to have their own Marketing teams.

In support of the Marketing arrangement with LIPTOSA, a series of events including Product & Sales Training, Technical Seminar for Veterinarians of Telangana & AP regions, a Booth in the Poultry Expo were jointly organised by LIPTOSA & IBC Teams at Hyderabad during November 24 – 29, 2019.

LIPTOSA was represented by Ms Ewa Sujka, Commercial Director and Dr Carlos Lopez, ASIA Area Manager. During their visit, 3 Natural





Products from LIPTOSA were introduced for the Indian Poultry segment :

- ❖ **COCCILIP** - Liquid & Powder preparations : To manage Coccidiosis & Enteritis, the Natural way.
- ❖ **LIPTOSAFE** - Liquid preparation : Detoxifier and Broad spectrum activity supporting Liver, Kidney & Intestinal



functions, overall Immunity enhancer. Natural Liver modulator,

- ❖ **FINTOX PRO ADVANCE** - Powder preparation : Anti-Mycotoxin & Detoxifying Additive has a very broad spectrum activity against major mycotoxins.

All the 3 Products will be available in India through the distribution network of IBC by December end.





## Poultry Expo (LIPTOSA - IBC) 2019



# **A herbal approach to keep Chick cool in summers 'COOL-A-CHICK'**



**Dr. Shilpi Dhall**  
Adlife Nutraceuticals  
Cell: +91-8950211440  
Email: adlifenutraceuticals@gmail.com

## **Introduction**

Spring has now past and we are creeping forward into the summer. Whilst this is great for most of us as it means holidays and great weather, spare a thought for our two legged friends who often struggle in the heat. Even if birds are not sick, these are serious matters for the farmer because he knows by experience that production falls in direct proportion to the bird's temperature and discomfort. With no treatment and worsening conditions the birds will die. When the body is heat stressed, the bird drinks more and eats less. (Appetite is depressed by 1.5% for each degree of environmental temperature rise above 20°C (68°F). A chicken's normal body temperature is between 40°C and 41°C (104°F and 107°F) but they do not have sweat glands, and there are limits to a chicken's ability to regulate their body temperature. Cold isn't really a problem – they have feathers to protect them – but heat can be a very serious issue. In areas of high humidity (above 50%), ambient temperatures which rise above just 20°C (68°F) will cause some mild heat stress; above 25°C (77°F) heat exhaustion will increase rapidly and at 30°C (86°F) the bird will not be able to lose heat fast enough and is likely to suffer a stroke brought on by the heat. In areas where humidity is not an issue chickens can survive (but not necessarily be comfortable) until the temperature reaches 40 °C (104 °F), at which point problems can become severe and quickly lead to heat stroke – which generally proves fatal – if not managed properly.

It's in those circumstances you should be aware of the signs of heat exhaustion and know how to deal with it. Some breeds can deal with extremes of temperature better than others. Those birds originating in cooler, more temperate climates have more difficulty in dealing with extremes of temperature. This will become an important factor when we look at ways of managing heat stress. Older chickens can sometimes adapt if the temperature rise is gradual, but if it's quick they won't be able to and they are likely to suffer the most. Heavy breeds will be next in line and broilers – birds bred for their meat – will show signs of heat exhaustion more quickly than layers. Broiler chicks between 6 and 8 weeks old have been shown to be even more badly affected by heat exhaustion than adults.

Let's take a look at how you can identify when your chickens have heat stroke and then many ways to cool them down during the summer.

## **Visible Symptoms**

Some breeds of chicken cope better than others in the heat, however when the temperatures get up and over the 80 Fahrenheit mark, any breed of chicken will start to suffer. This suffering can range from going off lay all the way through to, in extreme cases, dying. You will probably notice as the temperature gets over 90 Fahrenheit their egg production will slow down and eventually stop as temperatures exceed 100 Fahrenheit. Apart from this following are the signs which are clearly visible

- Walking around with their beaks wide open.
- Lying on the ground with their wings spread.
- Eating little amounts of food
- Gasping, panting, panting respiration – up to 250 breaths/ minute – mediating evaporative cooling from the surface of the lungs (80% of heat is lost this way)

- wings spreading
- Stupor, staggers and terminal convulsions
- Slowness and lethargy.
- Increased cannibalism
- Light body weight, poor colouring and rough skin.
- Egg production drop for no apparent reason
- Reduced egg size, poorer egg shell quality
- Increased mortality
- Increased output of urine – further loss of electrolytes
- Wet droppings develop
- Thirst increases- many times
- Ascites incidence increases
- Immunity to intercurrent disease is lowered
- Appetite is depressed, there is some indigestibility of feed and gut motility is slowed. Nutrient deficiencies may occur.
- There is loss of body weight
- Fertility is lowered
- Growth and growth rate are depressed
- Replacement pullets are lighter, lay later and lay fewer eggs
- Egg weight decreases
- Egg downgrades increase
- The absorption of minerals is altered wing spreading, and squatting close to the ground.
- Birds grow unevenly
- Force feeding for higher consumption levels leads to greater
- In Breeders, reduced fertility, due to less mating, poorer semen quality and female infertility

#### INVISIBLE SYMPTOMS

- pH of blood plasma rises

- pH within the cells falls
- Urine output increases and so does electrolytes
- Bicarbonate ( $\text{HCO}_3$ ) is lost
- Stress hormones appear in the blood
- Gene function is disturbed
- Resources being diverted to unproductive efforts by the animal (bird) to restore balance (homeostasis)
- Heat shock proteins are activated to shut down metabolic reactions and to protect heat-sensitive tissues.
- Responses to intercurrent diseases or pathogens decline rapidly.
- All production is stopped due to loss of homeostasis

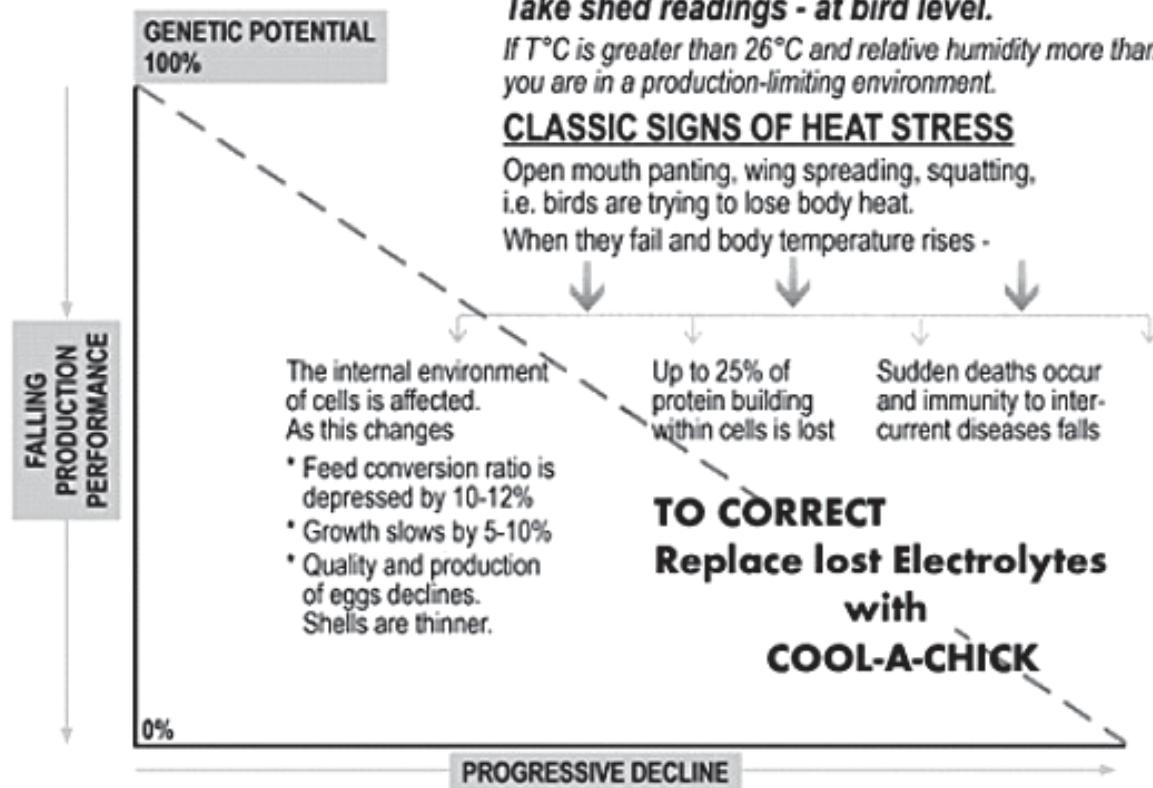
**SYMPTOMS AT POST-MORTEM:** When deep body temperature is elevated for prolonged periods, biochemical and physiological changes damage vital body organs such as the heart, lung, liver and kidney.

At post-mortem obvious signs of organ damage present with the following characteristics:

- The heart muscle increases in size at the right atrium with significant blood accumulation.
- Congestion and build up of fluids and blood is common.
- Colour changes to a pale yellow and is congested.
- **Kidney** Swells and is inflamed, water blood and urine accumulates.
- Muscles are dry and sticky to touch.
- Blood is thicker and darker than normal.
- Crop and gizzard are empty and dry. Gizzard lining peels off easily.

The above clinical signs emphasize the need for poultry producers to do everything possible to minimize the increase in deep body temperature .

## UNDERSTAND THE SIGNS AND BEGIN TO CORRECT THEM



### HOW TO MAKE CHICKS COOL

#### 1. Cool Their Water

The first and easiest thing you can do is to sort their water supply out. Make sure to keep the water tanks covered with wet jute sacks if possible and also keep water tanks in shed to prevent them from direct sunlight. It is not enough to give the bird water alone. This only increases the problem, by further stimulating the loss of electrolytes. This problem can be improved by adding 'Cool-A-Chick' in water.

#### 2. Make sure their coop has enough space.

Putting too many chickens in too small of an area, can cause the coop to heat up quickly due to excessive body heat and moisture and prevents them from staying cool. It is recommended that the coop have 4 square feet per bird. Also consider adding a thermometer to see what the temperature is.

#### 3. Spray around the coop with solution of ADS Plus and water.

Spraying around the coop and the roof can cause evaporative cooling for your chickens. Add ADS Plus in water for spraying which acts as Acidifier Disinfectant and Sanitizer to prevent the chicks from any kind of infection.

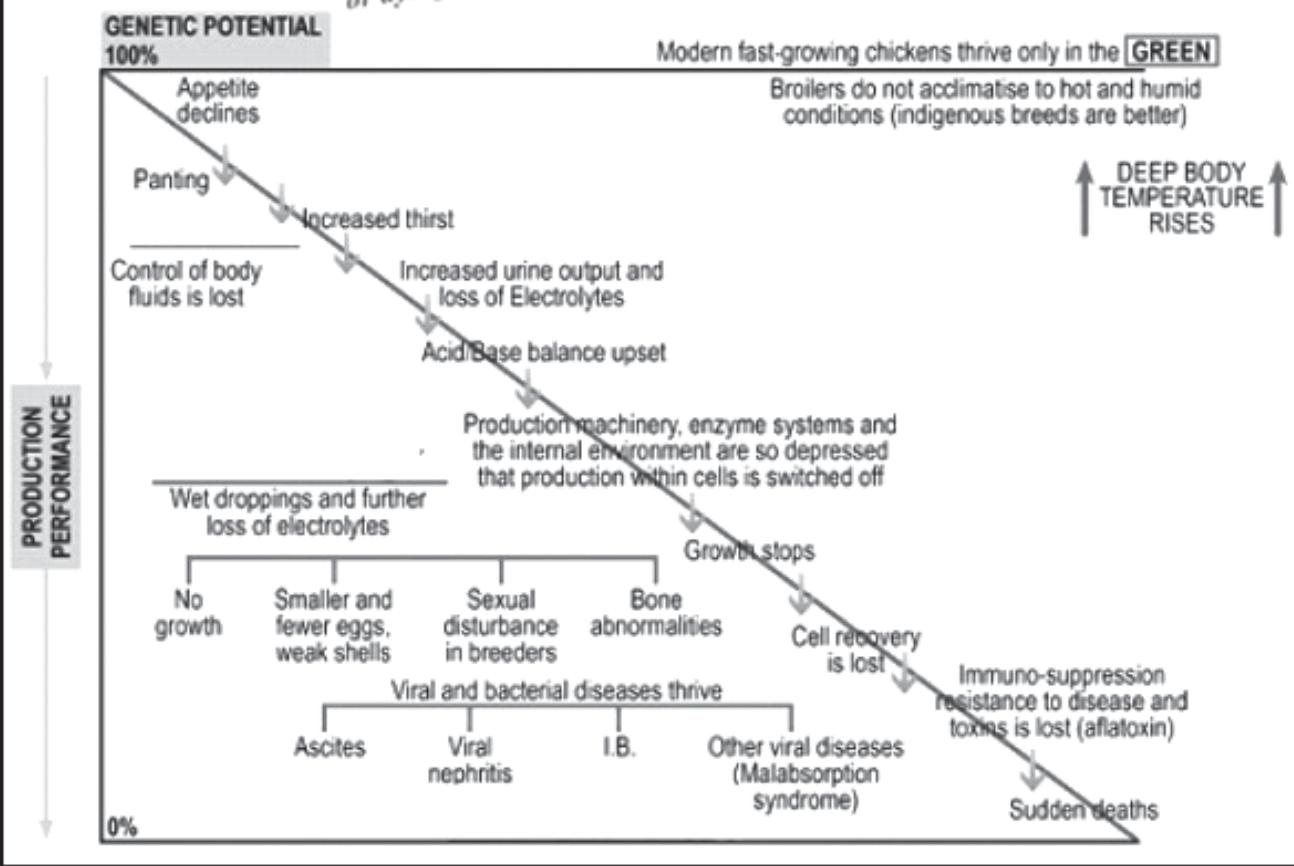
#### 4. Appropriate Feed

Once you've sorted their water supply out the second best thing you can is feed them in a right manner. Don't feed them Maize (diced corn) or scratch as this takes them a long time to digest and causes their body temperature to rise.

#### 5. Ventilate Their Coop

To keep your chicken coop cool you need to allow for ventilation. The simplest way to do this is to fit a window into your coop and leave the window slightly open when they go to roost. This will give your chickens nice cool air throughout the night. *Read how much room do chickens need for more advice on chicken coop design.* If you're

## LIVING WITH A HOSTILE "HEAT" ENVIRONMENT or dying



concerned about predators you can place a steel window guard on the outside of the window. Another great way to reduce the temperature is to install a fan in their coop and run it during the daytime. This helps keep the coop cool so it isn't hot when they go to roost in the evening. Finally, make sure you only have a very thin layer of bedding (sawdust) down on the floor of the coop. if you have too much chicken bedding inside your coop during the summer, it will act as an insulator and keep some heat inside the coop.

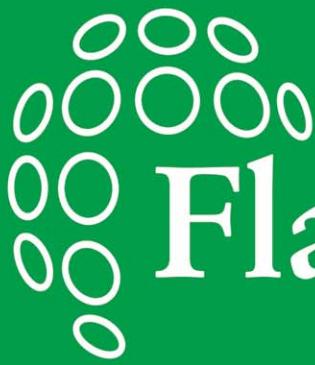
To stop this vicious cycle a scientifically balanced electrolyte which remedies dietary electrolyte balance '**Cool-A-Chick**' must be added to the drinking water.

### CONCLUSION

'**Cool-A-Chick**' is a unique herbal product specially made for chicks to make them cool in summers. It

is a powerful coolent with probiotics and aspirin extracted from willow bark fortified with vitamin C Stress reliever in summer Save your Flock with '**Cool-A-Chick**' Drops. This product is a versatile and has diversified benefits which are as follows

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- Prevents dehydration
- Provides ready source of energy
- Improve Immunity
- Enhances intestinal microûora depleted due to heat stress
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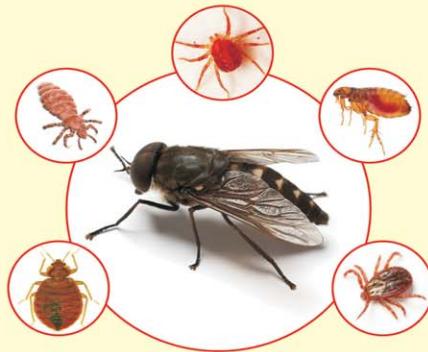


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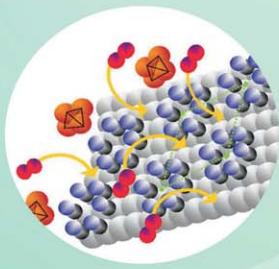
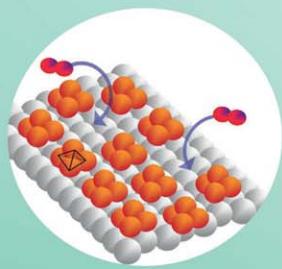
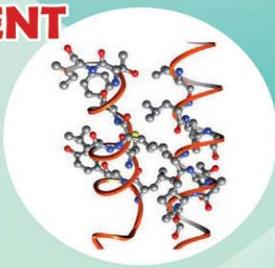
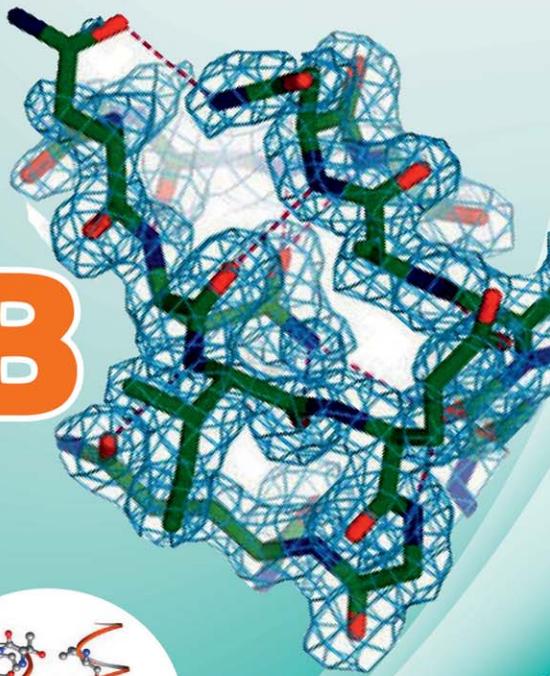
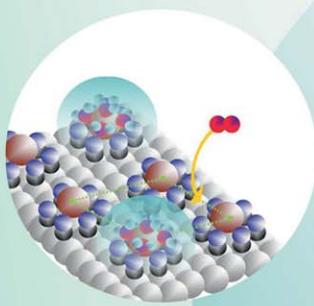
**Improve Farm Productivity**

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



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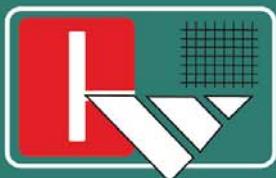
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## Crop Survey – India, Kharif 2019

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

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

It was observed that lower acreage sowing by farmers, heavy rains at time of harvest and fall armyworm infestation had resulted in poor yield of maize and soya crops. Soybean Processors Association of India (SOPA) has estimated that

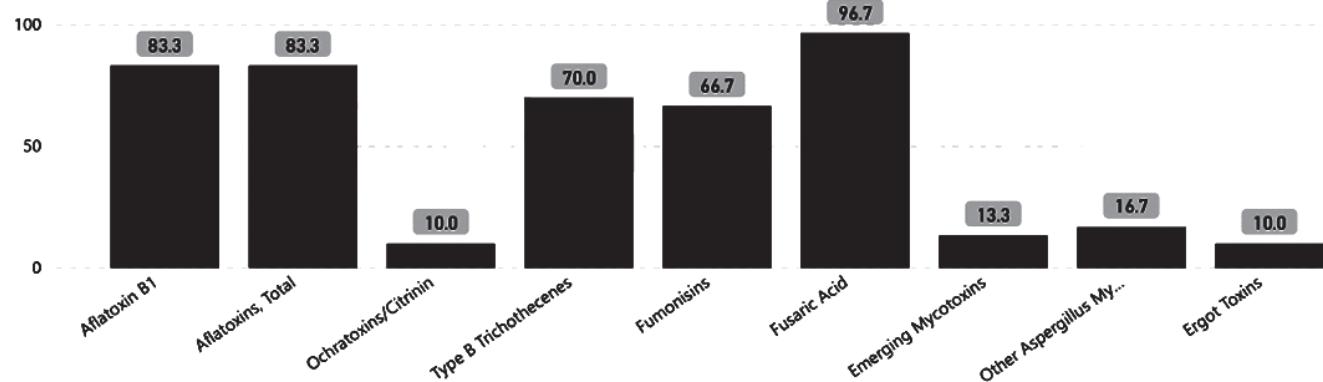
Further, maize and soybean samples were collected from the Indian states Karnataka, Maharashtra, Telangana and Madhya Pradesh during the first week of November 2019. These were assessed for quality, yield and risk associated with these in the feed chain. Samples were tested using the Alltech 37+® mycotoxin analysis, which assessed the mycotoxin contamination in these ingredients using the LCMS-MS method.

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

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

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

**Mycotoxin Occurrence, %**



soya crop output will be around 8.8 million metric tonnes in 2019, compared to approximately 11 million metric tonnes in the previous year, which is almost 20% less.

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

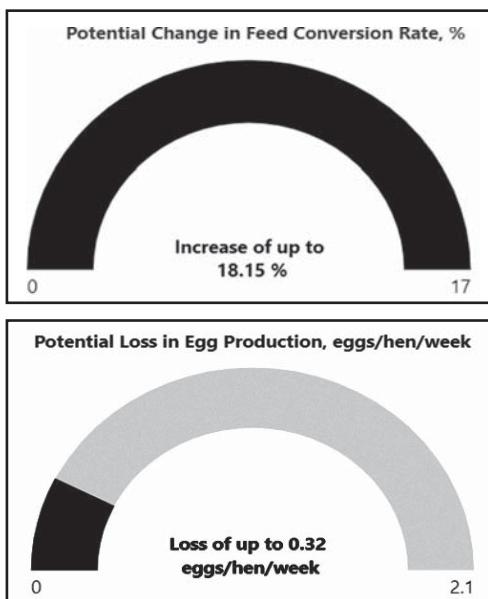
#### Average Mycotoxin Assessment for Performance Impairment for Poultry - Starters

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



**Alltech®**  
**MYCOTOXIN MANAGEMENT**

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



#### Summary of the survey:

- Due to late rains and fall armyworm infestation, maize crop is heavily affected by poor quality grains, has high moisture and mycotoxin producing fungus.
- Aflatoxins, deoxynivalenol, fumonisins and fusaric acid are the most present mycotoxins

in kharif maize of all states. Multiple mycotoxins is a prevalent challenge.

- Constant monitoring is the key to reducing mycotoxin risk. Feed producers must use a suitable mold inhibitor and broad-spectrum mycotoxin binder
- Soya output is expected to have a 20% reduction in the 2019 crop year. Prices of soya DOC will remain high.

**For more information, please contact**

Author-

**Dr. Lokesh Gupta**

Technical Manager – Poultry (South Asia)

lgupta@alltech.com

**-Ends-**

#### About Alltech:

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With expertise in yeast fermentation, solid state fermentation and the sciences of nutrigenomics and metabolomics, Alltech is a leading producer of yeast additives, organic trace minerals, feed ingredients, premix and feed.

Together, with our more than 5,000 talented team members worldwide, we believe in “Working Together for a Planet of Plenty™” With the adoption of new technologies, the adaptation of better farm management practices and the ingenuity inherent in the human spirit, we believe a world of abundance could be ours.

Alltech is a private, family-owned company, which allows us to adapt quickly to our customers' needs and stay focused on advanced innovation. Headquartered just outside of Lexington, Kentucky, USA, Alltech has a strong presence in all regions of the world. For further information, visit [www.alltech.com/news](http://www.alltech.com/news). Join us in conversation on [Facebook](#), [Twitter](#) and [LinkedIn](#).

## PRESS RELEASE



# IPJA honours Alltech founder, the late Dr. Pearse Lyons, with Lifetime Achievement Award

[HYDERABAD, India] – On November 27, the Indian Poultry Journalists Association honoured the late Dr. Pearse Lyons with the Lifetime Achievement Award at the official IPJA Award Night held in Hyderabad.

Dr. Mark Lyons, president and CEO of Alltech and son of Dr. Pearse Lyons, received the award, along with his wife, Mrs. Holly Lyons, on behalf of his father from Mr. Etela Rajendra, health minister of Telangana.

“He was driven by his curiosity, and that curiosity brought him here to India, to plant trees that he would never see grow,” said Mark. “His passion toward science and innovation was enormous, and he was able to use all these skills to unleash ideas into the world.”

An Irish entrepreneur and scientist, Dr. Lyons was a visionary who transformed the agriculture industry, beginning with his innovative application of yeast technology in animal nutrition. The Dundalk native emigrated to the United States in the late 1970s, where he set up Alltech in his garage in Kentucky with an initial investment of \$10,000. The company focuses on improving animal, crop and human health and performance through its innovative use of yeast fermentation, enzyme technology and nutrigenomics.

Describing Alltech as a purpose-driven company, Mark quoted Dr. Lyons’ own words, “The legacy I would like to leave is: We made a difference. It’s not about making money; it’s about making a difference.”

Concluding, Mark shared Alltech’s new vision of ‘Working Together for a **Planet of Plenty**™’, stating, “agriculture has the greatest potential to shape the future of our planet. It is an invitation to work together, across industry sectors and geographical

boundaries, to create a place where animals, plants and people thrive in harmony. Through innovation and inspiration, we will work together to build a plentiful planet.”

**-Ends-**

**Contact:** Dr. Manish Chaurasia, Marketing manager, Poultry (South Asia) [mchaurasia@alltech.com](mailto:mchaurasia@alltech.com); +91 8130890989

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## Alltech launches 5<sup>th</sup> annual art contest calendar and also unveils mycotoxin survey documentary and Raptor mobile app in Poultry India 2019

[HYDERABAD, India] – The Alltech stall at Poultry India 2019 became a stage for announcements with the launch of the Alltech Art Contest calendar. Dr. Mark Lyons, Alltech president and CEO, and Dr. Aman Sayed, India managing director and South Asia regional director, unveiled the calendar alongside chief guest, Mr. Dhiraj Chaudhary, managing director of Hitech Nutrition.

This is the fifth year of the Alltech Art Contest, aimed at children aged 5–16 years. This year, Alltech India received 800 submissions from across the country, which beautifully displayed the imagination of India's youth. All participants were awarded a participatory certificate and gift, and the 39 finalists were rewarded with a cash prize along with gifts.

The theme of this year's competition was "A Planet of Plenty™" — the new Alltech vision inviting collaboration across industries and geographies for new technologies and practices that will improve the well-being of our world and all of its inhabitants.

The second day of Poultry India marked another important event, with the launch of the fresh harvest

maize and soya mycotoxin survey results and documentary. Dr. Lyons raised the curtain on the survey documentary and celebrated the moment with champagne and cake.

Alltech India surveyed maize and soya to better understand the ground reality for the high price of raw materials. Concentrating on the major maize growing states like Karnataka, Maharashtra and Telangana, along with Madhya Pradesh for soybean, the team reached out to farms and markets to understand the issues and collect samples. These samples were then tested for quality at the Alltech 37+® mineral analysis laboratory in Dunboyne, Ireland.

Fall armyworm and excess rain were observed as major factors in crop loss, resulting in a supply crisis and increased prices. Dr. Manish Chaurasia, South Asia poultry marketing manager, explained the objectives of taking up the survey, while Ms. Raksha P R, marketing executive, described the groundwork done for the survey. Dr. Lokesh Gupta, South Asia poultry technical manager, then broke

### 5<sup>th</sup> Annual Art Contest 2019 Winners:

Age	First	Second	Third
5	Vinisha	Kavya Viral Patel	Aadhyaa
6	Parinitha R	S. Vidhush	Sougata Maity
7	Tanishk Yadav	S. Hasini	Thadi Livia Sri
8	Mary Jenishka J	Aliya Bansal	Smrithi D. Rai
9	Shreyas Sanjay Nikam	Srinjan Mukherjee	S D Aaradhya
10	S. Shrivika	Devika	Ankit Kumar
11	Mahip Singh Saini	Anvith H	D. Nivas Reddy
12	Nirali Yadav	Ananya	CH Subhakanta Das
13	Aniket Pramanik	Yatri Patel	Loveditya Jain
14	Q Aamira Rahman	Debasmita Kar	Tushar Banik
15	Dhanush D S	Karanvir Singh Bhatti	S Dharsha
16	Jalpan P. Dave	Mansimrat Kaur	Prastish Fatima
Jury selections	Soham Chandrakant Devkar	Onkar Sudhakar Pawar	Amrut Dattatray Mahamuni

down the results of the 37+ testing, stating that, average of number of mycotoxins found in collected sample was five.

Following the ceremony, Dr. Nick Adams, Alltech® Mycotoxin Management team, global director, launched Raptor, a mobile application for analysing mycotoxin results.

Other highlights from the Alltech stall were the mezzanine space for live instrument demonstration, the magic mirror selfie booth and happy hours with mocktails to educate and entertain customers.

**-Ends-**

**Contact:**Dr. Manish Chaurasia,  
Marketing manager, Poultry (South Asia)  
mchaurasia@alltech.com; +91 8130890989

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#### **About Alltech 37+®:**

Mycotoxins have been shown to reduce feed intake, damage gut integrity and cause poor fertility and each of these issues can be a major cost to producers. Identifying and addressing these hidden challenges is very important and with the Alltech 37+ test, mycotoxins can't remain hidden for long.

The Alltech 37+ mycotoxin analysis test is the cornerstone of our mycotoxin control program and between our labs in Lexington Kentucky and Dunboyne Ireland, we have run over 24,000 samples, each searching for over 50 mycotoxins in animal feed.

Alltech 37+ test results provide a realistic picture of feed contaminants in feed ingredients or TMRs to speed up the process of diagnosis, suggest effective remediation and help move toward an effective mycotoxin control plan.

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## PRESS RELEASE

# ALL INDIA POULTRY FARMERS WELFARE ASSOCIATION

## Core Committee Members Meeting

The Core Committee Members Meeting of ALL INDIA POULTRY FARMERS WELFARE ASSOCIATION held in Hotel NOVOTEL, Hyderabad on December 21, 2019; proved to be a stepping stone for the welfare of Poultry Farmers. "The meeting was held in a good & cordial atmosphere of Core Committee Members headed under the Chairmanship of Sh. Suresh Raidu, Chairman International Egg Commission & Managing Director of Srinivasa Farms. "The Core Committee Members who were present in the meeting were RAJESH SETHI,

Baljinder AGHI, Mr. SATISH Babu, Zonal Chairman NECC . Mr. Achin BANERJEE , Zonal Chairman , NECC.Dr. Shirish Nigam Managing Director , EW Nutirtion ,Mr. RAJIV (Suguna Group) Dr. SRINIVAS Rao , Senior Consultant) Hyderabad Dr. Kamran (IB Group), DS Subramaniam of Tara Group & Rakesh BHARDWAJ. "It was decided to get good price to poultry farmers in the coming year 2020." Following are the pictures of the meeting for Group members.



## PRESS RELEASE

# DUN & BRADSTREET – RBL Bank SME Business Excellence Award 2019 to INDIAN HERBS, Saharanpur



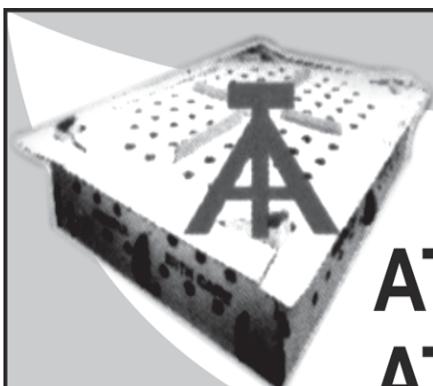
Dun & Bradstreet, the world's leading credit rating agency and knowledge providers, has selected Indian Herbs Specialities Pvt. Ltd., as a winner of the RBL Bank SME Business Excellence Award 2019 in the Pharmaceuticals sector, in recognition of the role it is playing in the nation's development. The recognition is given to most innovative companies besides other criteria. The award was presented by Shri Pratap Chandra Sarangi, Honourable Minister for Micro, Small & Medium Enterprises (MSMSE) ministry, Govt. of India, at a

grand event held on 20<sup>th</sup> November, 2019 at Hotel Hyatt Regency, New Delhi and on behalf of Indian Herbs, the award was received by its Director, Shri Vipul Agrawal (*2<sup>nd</sup> from left*).

Indian Herbs, has been winner of many prestigious awards from Government of India, Government of Uttar Pradesh and reputed autonomous bodies and associations in the past, for outstanding quality products, outstanding R & D achievements, outstanding entrepreneurship, product quality excellence, significant export performance etc.

The latest award from D&B adds further credentials and credibility to Indian Herbs, which has now become a company with global reach. Indian Herbs' products are now marketed in around 50 countries of the world.

Natural (herbal) products are now preferred all over the world due to the adverse and untoward effects associated with synthetic chemical products and additives. Indian Herbs is a leading and pioneer enterprise in this field and its products are very successfully marketed in different parts of the world, including the developed countries.



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## How to increase the profitability of your Poultry Farm

When running a poultry farm, there are numerous benefits to dramatically scaling up poultry production, with the primary focus, of course, being on streamlining the overall operation and making a reasonable grow out cycle/turnaround time feasible and consistent throughout the year too. This can only be done by hiring help on the farm and/or using independent, contracted service providers, and we're going to take a look at how this works. So first there's the bottom line.

Hypothetically going from no houses to 1 – 20,000 sq. ft. house could yield about \$15,000-19,000 in net profit annually. However, by just deciding to raise chickens commercially you're totally committed to a 24/7 operation – you have to always be around, day and night, and you'll have to learn about running controllers, adjusting static pressure, water quality and how to maintain just the right level of lighting.

In addition to this, we have to take into consideration your kit – you're going to have to have on hand wire cable, electrical supplies, PVC piping, feeder repair supplies and, of course, plenty of drinker line supplies too. Aside from the kit, we move onto the equipment list, which isn't exhaustive by any means, this being a tractor or front end loader, drills, grinders, blowers and a top notch, reliable power washer.

So this has given you an idea of the investment required to initially scale up the farm.

Now, let's say you want to expand and take advantage of the significantly increased potential profit margin associated with a much larger operation. For instance a 40,200 sq. ft. area requires less than double the amount of resources of a 20,000 sq. ft. area (it doesn't scale directly, the operation becomes more efficient) in terms of heating, cooling, lighting, motors, fans and very importantly, the overall time required to manage the house.

As a result of this increased efficiency, the gross profits will increase, so this will go towards covering your labor costs, which are a given as your operational size increases. This is very exciting, essentially, because by adding more capacity you can more than pay for the hired help that you would have to outsource to be able to get the job done properly.

This is particularly important because you have to be able to run your farm with a high degree of precision, with each facet of the system working in sync with the other, without allowing any element to deviate too far from the ideal range required within any particular growth phase or season. You'll be placing yourself in more of a management role, overseeing your farm and workers.

This is why outsourcing specific services that are required during the grow-out cycle to highly trained experts in their areas of expertise becomes necessary. These people can get these tasks done faster and to a higher standard than the grower can do on their own. The outsourcing tightens up the timetable significantly, thus increasing the overall annual yield, thereby increasing profitability (even with including paying for the services that are being outsourced).

So let's look at an example, if you were to put up 6 – 40,200 sq. ft. houses this could theoretically yield as much as \$200,000-240,000 in net profit annually if you could do it all yourself, and depending on how efficiently you can run your farm in today's market. However, it would be virtually impossible to do yourself, so reliable help is required.

So if you're sitting on the fence as to whether it would be a good move for you to begin growing your farm, here's a final thought for you, if for some reason you don't succeed at this, bankruptcy is exactly the same regardless of size. So although the risk associated with scaling up can be intimidating – and yes, even downright scary at times, it's also a very calculated risk, and it's worthwhile noting that most banks are generally more willing to help you succeed with larger amounts of debt, in the event you do run into unexpected complications down the line.

The most important thing to calculate before expanding your poultry farm is the current profit of your business and the demand of your products in the market, if you are not able yield enough profit to repay your bank loans then you should postpone your poultry farm expansion plans, on the other hand if the demand of your products are less than the standard then you should first focus on marketing more than expansion.

*Source: Poultry Services*

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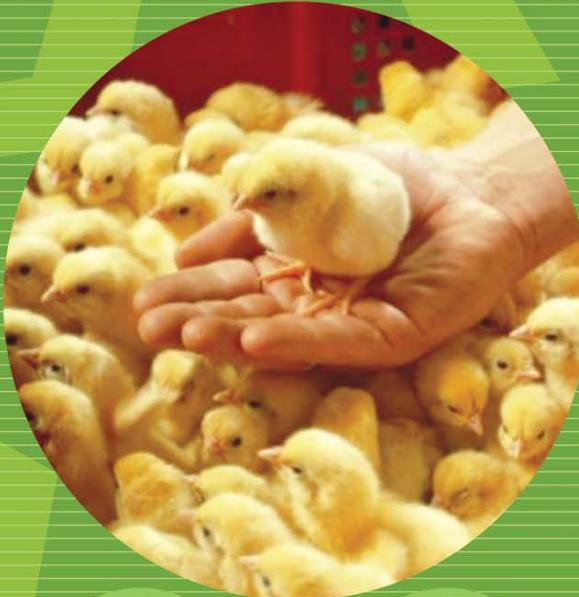
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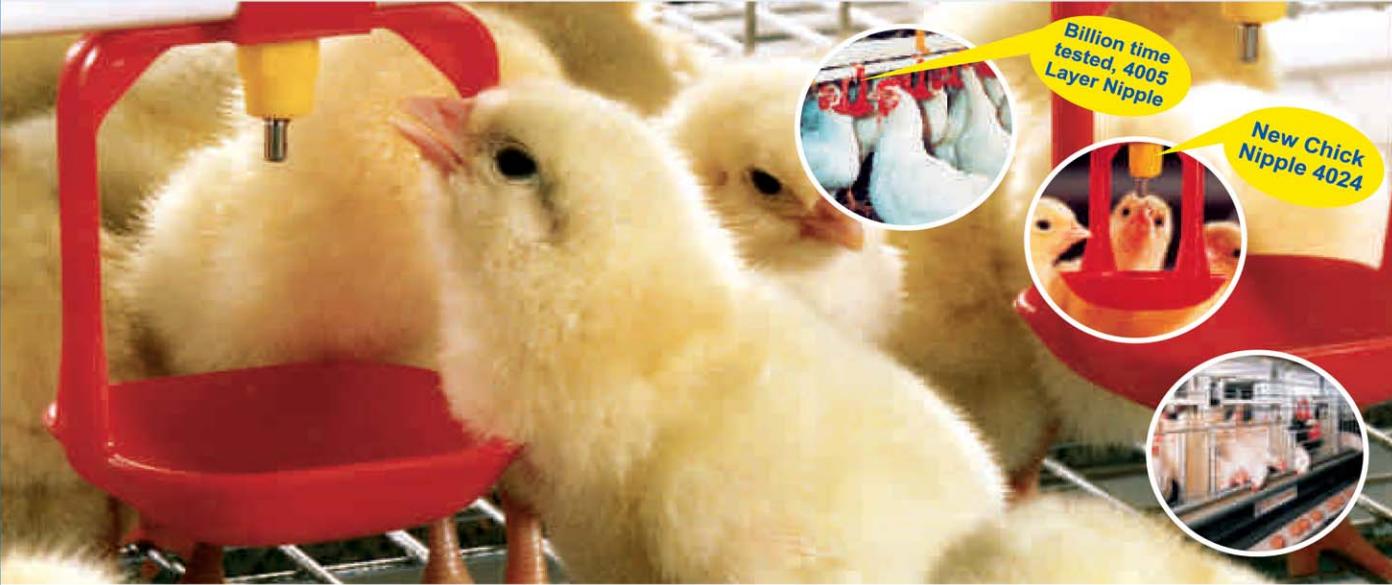
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## PRESS RELEASE

# Grand participation of INDIAN HERBS in POULTRY INDIA 2019 held in Hyderabad from 27 – 29 November, 2019

**INDIAN HERBS**, the pioneer and market leader and **No.1 Company** in Herbal Animal Health Care Products Industry since 1951 participated in **POULTRY INDIA 2019 held at Hitex Exhibition Complex, Hyderabad from 27<sup>th</sup> to 29<sup>th</sup> November, 2019** with its strong technical and marketing team. The sales and marketing team gave a warm welcome to all the visiting customers and consultants at **INDIAN HERBS** stall.

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

Realizing the emerging needs of industry, **INDIAN HERBS** has developed unique formulation for use in poultry industry as natural alternative of synthetic products. **INDIAN HERBS** is the first company to introduce research oriented unique herbal concepts in important segments such as Choline (**BioCholine**), Vitamin C (**Herbal C**), Natural Vitamin C with Chromium (**HeatBeat**), Vitamin E (**E-Sel Power**), AGP (**Herbiotic FS**), Respiratory Antiseptic (**Animunin**), Immune Potentiator (**ImmuPlus**), Metabolic Stimulant and Liver Tonic (**LivoLiv-DS & LivoLiv 250**), Coccidiosis (**ZeeCox**), Methionine (**HerboMethione Plus**), Lysine (**HerboLysin**), Natural Calcium (**MagaCal**), Male Vitality and Breeding Efficiency Optimizer (**ProLibid**), Anti-stress & Adaptogen (**StressCheck**), Renal Tonic (**NephTone**) etc. These products are being used successfully by leading institutional customers in India as well as abroad with excellent results. The products

are not only most economical and ecofriendly but also improve the quality of feed, productivity and profitability.

These products are being used by the leading institutions in India and abroad with excellent results. The products are successfully being exported to more than 50 countries across four continents including Asia, Europe, Latin America and Africa. **INDIAN HERBS** has also received the certificate from **EXPORT INSPECTION COUNCIL OF INDIA**, Ministry of Commerce and Industry, Govt. of India and was the first Herbal Company to get this recognition.

The R&D Centre of **INDIAN HERBS**, which is approved by the Ministry of Science & Technology, Govt. of India since 1986, is well equipped with the best available state of the art modern facilities for standardization and quality control of herbal products. There is a continuous process of scientific evaluation on herbal products of **INDIAN HERBS** in comparison to synthetic products in India and abroad to ensure best quality and efficacy of the products. More than 200 scientists have been awarded Masters and Doctorate degrees for their research work which has resulted in publication of more than 1000 research papers in the eminent national and international scientific journals. **INDIAN HERBS** has the distinction of getting more than 22 Patents in USA, Europe, India etc. and many Patents are pending in USA and other countries for innovative research on herbs and herbal products.

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

**INDIAN HERBS** is committed to foster the wellbeing of animals through nature's bliss and caters antibiotic free, residue and resistance free, environment friendly, cost effective phytogenic solutions for animal healthcare.

## Photo Collage of INDIAN HERBS in POULTRY INDIA, Hyderabad November 2019



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