

MARCH 2023

MONTHLY BILINGUAL

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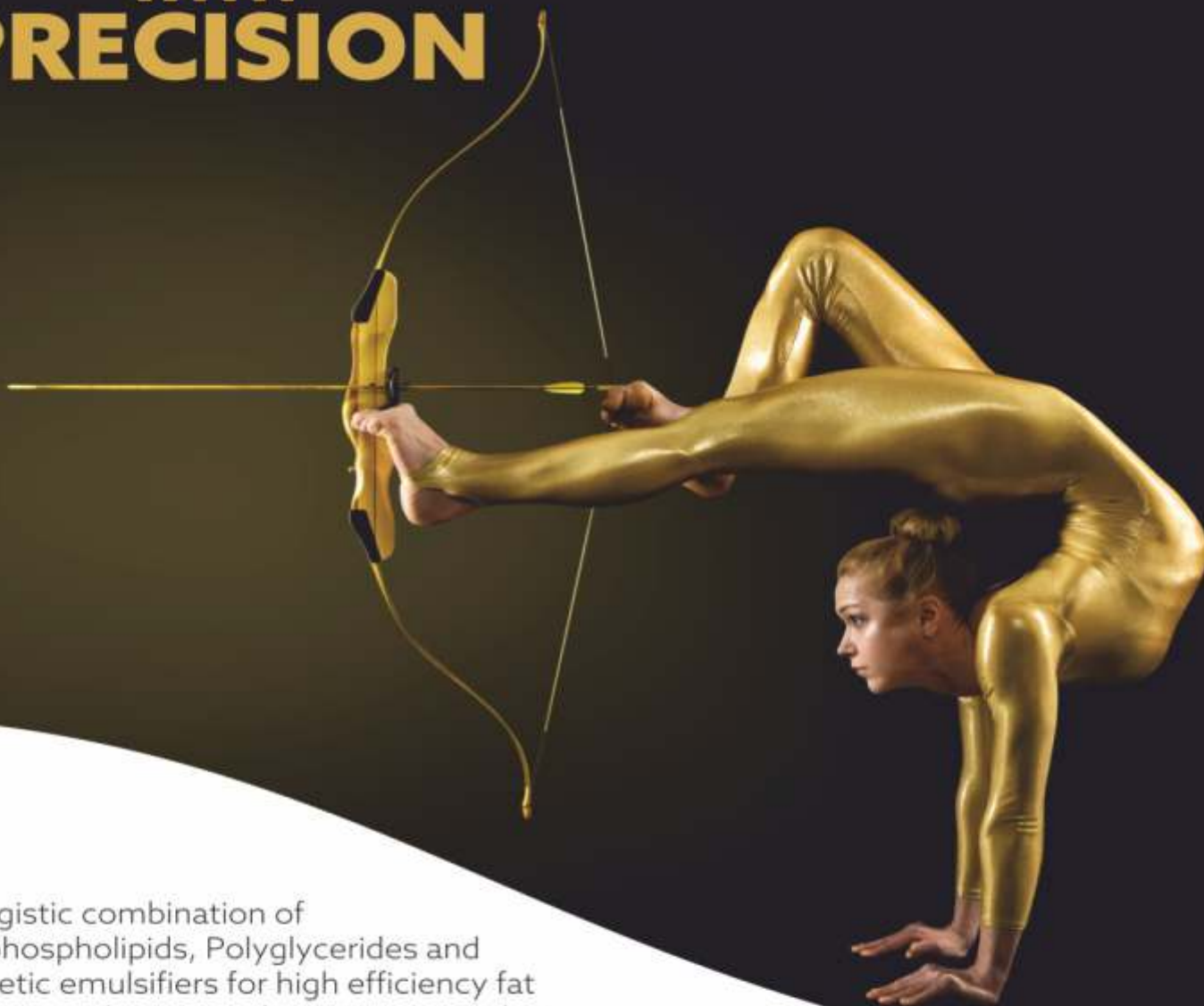
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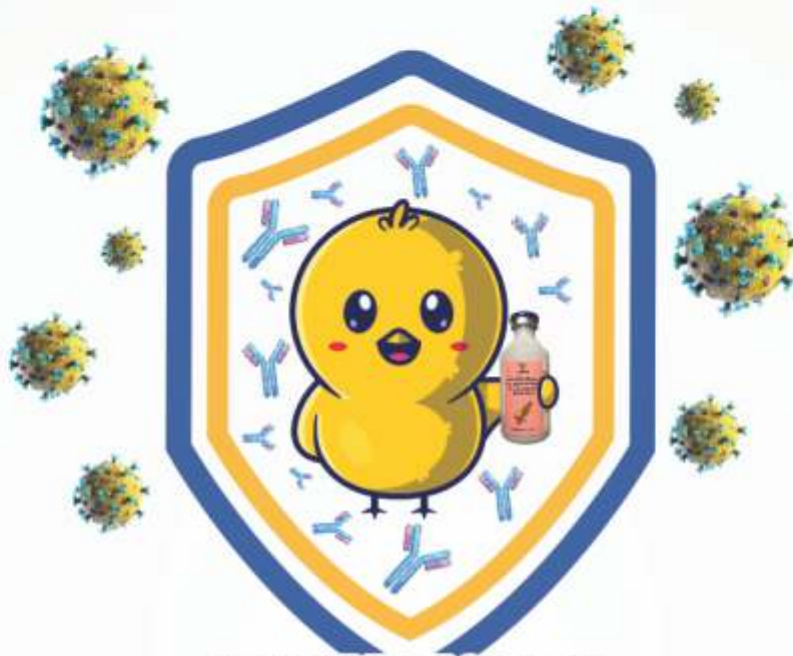
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# From the Editor's Desk

## The Rise of Superbugs



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Health awareness has increased significantly with growing concerns about rising anti-microbial resistance (AMR) in humans. AMR can often be traced back to food sources. AMR bacteria can spread from poultry to humans through the consumption of contaminated meat leading to infections that are difficult to treat with antibiotics.

Overuse and misuse of antibiotics in poultry production poses a risk to both animal and human health. It is essential to implement good animal husbandry practices, like proper hygiene and bio-security measures, to prevent the spread of bacterial infections. Judicious and only necessary use of antibiotics, followed by proper withdrawal periods to ensure that antibiotic residues are not left in the meat is required.

Vaccination can be used to prevent bacterial infections, reducing the use of antibiotics in poultry production and decreasing the risk of AMR. Use of probiotics in feed improves gut health and reduces the risk of bacterial infections. Alternative treatments like herbal remedies and essential oils can be used to promote gut health and treat bacterial infections.

Above all is the need to educate farmers, veterinarians, and consumers about the risks of AMR, the importance of responsible use of antibiotics and the ways to overcome the rising problem of antibiotic resistance.

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- Unpublished material of industrial interest, not submitted elsewhere, is invited.
- The submitted material will not be returned.
- Publisher, Printer Mrs. Bhavana Gupta on behalf of Pixie Publication India (P) Ltd. Karnal Printed at Jaiswal Printing Press, Railway Road, Karnal
- Published at : C/o OmAng Hotel, Namaste Chowk, Near Janta Petrol Pump, KARNAL - 132001 (Haryana) INDIA
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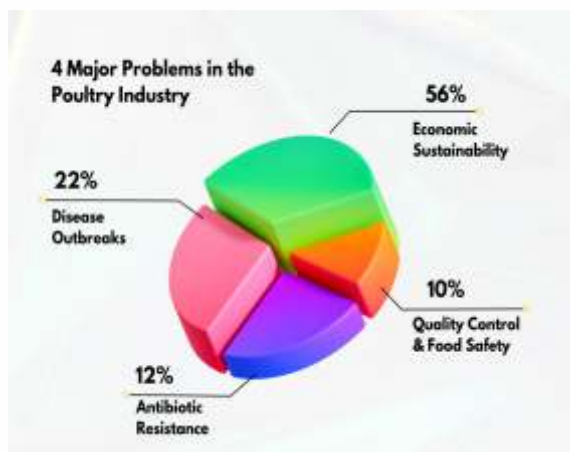
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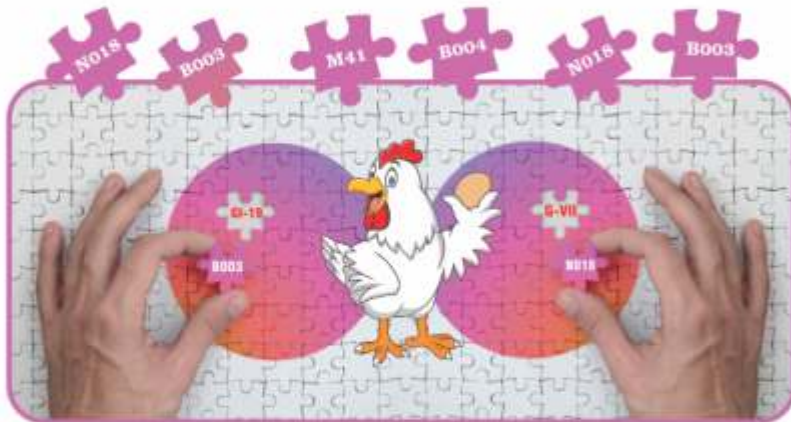
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# How to Stop Your Chickens from Going Full Cannibal

**Sanket M. Kalam**

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Chickens have their own social hierarchy which is commonly referred to as the "pecking order". It's not all sunshine and rainbows though - establishing this order often involves some gentle pecking, which can escalate into harmful "feather pecking". Yep, you read that right. Feather pecking can lead to skin damage, messed up plumage, and even cannibalism. Yikes!

But wait, it gets weirder. Apparently, chickens are picky about their feathers. Short ones are more likely to get picked on than long ones, and hens who lay brown-shelled eggs are more prone to feather pecking than their white-shelled egg-laying counterparts. And don't even think about escaping feather pecking by going free-range -

all production systems are susceptible to this strange behavior.

However, there is a silver lining - fewer birds in a flock means a more stable pecking order and less feather pecking drama. So, if you're a chicken looking to avoid some beak-induced headaches, maybe opt for a solo career rather than joining a group.

Pecking, ripping, and munching on each other's skin, organs, and tissue is called cannibalism, and it's not picky about the bird breed or age. Chickens, ducks, turkeys, quail, and pheasants are all at risk of becoming cannibals.

And it's not just the housing system that matters - whether it's a cage, floor pen, aviary, or free-range system, cannibalism can happen anywhere. Once one bird starts the vicious



pecking, it's like a domino effect - the others will follow suit. If not dealt with, the flock could suffer from injuries and even death.

But don't worry, prevention is key! While genetics play a role, management practices are equally important. Even the best-managed flocks can fall victim to cannibalism, but taking precautions can lower the risk. So, remember, keep your birds happy and healthy, and watch out for any suspicious pecking behavior!

### **Causes Of Feather Pecking And Cannibalism**

#### **Overcrowding**

Overcrowding can lead to cannibalism and feather pecking. It's essential to provide enough area for each flock member to drink and eat. Failure to do so may promote competition that might result in cannibalism, hence dominant birds keep lesser-dominant birds away from feed and water. Having an adequate feeder allows all birds to eat simultaneously and prevents birds from becoming underweight and getting cannibalized. Adequate floor space is important in birds particularly prone to cannibalism.

#### **Overheating**

Severe pecking is more likely to occur in tropical, hot, and humid environments. Compared to hot and humid climates, laying hens and parent stock may tolerate cooler, but drier conditions better. Investing in efficient temperature control equipment will pay itself back over time. Depending on the type of birds in your flock and their age, provide enough fresh, cold water and enough ventilation.

#### **Excessive Light**

A flock's cannibalistic tendencies may be influenced by the number of hours and brightness of the light provided. Birds become aggressive against one another when exposed to excessively bright lights or prolonged durations of light. LED lighting is strongly preferred. While brooding avoid bulbs more powerful than 40 W. Use infrared bulbs if more powerful bulbs are required for the heat.

#### **Inadequate nutrition**

It is essential to provide a well-balanced diet and ample amount of water to birds. Cannibalism has been linked to protein, salt, and phosphorus deficiency. Birds become active and aggressive as a result of high-energy, low-fiber diets. If the diet is deficit in protein and other nutrients, especially the amino acid methionine it results in feather pecking. A balanced diet is provided according to the age and type of rearing birds. As a bird grows protein and energy requirement changes and it should be adjusted according to the feeding standards.

Birds raised on scratching and pecking litter are less prone to develop cannibalistic behaviour. A chicken's natural behaviour involves spending a significant amount of the day in search of food. Whenever the environment is not conducive for the expression of typical foraging behaviour, pecking may be diverted toward flock mates, leading to cannibalism. It is important to supply foraging items to birds, such as straw, green leafy vegetables, or grass clippings. Additionally, small grains can be fed to birds in deep litter. As birds sift through a variety of ground particles and take much longer to consume their feeds, instead of pelleted feed a mash diet may also help to avoid outbreaks of cannibalism. When feeding additional grains, provide them only in the afternoon after feeding a complete diet and quantity must be as much that could be consumed within 15 minutes.

#### **Injured or dead birds left in the flock**

It is important to avoid injuries as chickens are attracted to blood thus, cannibalism epidemics can be started by one bird getting hurt which can lead to the rest of the flock or cagemates pecking at the wound. Loose wire on pens and cages also causes injury. Chickens that are cannibalistic, wounded, deceased, or victims of cannibalism should be immediately removed from the flock. Due to social hierarchy and their natural curiosity, birds will peck at

impaired, injured, or deceased birds in their enclosures. Once pecking begins it may rapidly turn into a terrible habit.

#### **Flock size**

In small flocks of chickens, the social hierarchy is based on individual recognition. In large flocks, the order is compromised and the birds become less hostile and more accepting of others since they are unable to distinguish all the other flock members.

#### **Flock of different ages and colours**

Risk of cannibalism increases when birds of varying ages, breeds, colours or sizes are reared together which usually disturbs the flock's social hierarchy. Mixing of birds with different traits should be avoided as it encourages pecking.

#### **Abrupt changes**

Birds can become stressed and aggressive due to abrupt changes in management practices or the environment. Young birds should have part of their feeders and waterers moved with them while relocating them, as this will aid in their adjustment. It is beneficial to keep the smaller equipment in the pen for a few days after introducing larger feeders and waterers to ease the transition.

#### **Inadequate nest boxes**

Cannibalism may be avoided by giving laying hens the proper nest boxes and nesting environment. Avoid placing strong lights close to the nesting areas. A hen may safely lay eggs in a dark nest box because it shields the everted cloaca from exposure during egg-laying. Some cannibalism epidemics start during egg laying because the cloaca is so attractive for pecking.

#### **Prevention**

- An important step in preventing cannibalism is to choose genetic stock that is not prone to it, in addition to it make sure that birds have an appropriate diet and an environment free of the stresses as mentioned above.
- The tendency to feather pecking is a heritable characteristic, and



producers and breeders can choose to breed chickens with fewer feather pecking traits.

- Cannibalism is most common in young birds during feather development. Slow-feathering birds are more vulnerable to cannibalism because their immature, fragile feathers are exposed for lengthy periods of time, leaving the birds vulnerable to pecking damage thus, they should not be raised with other types of birds.

#### **Control**

Cannibalism is better avoided, but if it does happen, it must be stopped every once to avoid spreading to the rest of the flock. This goal can be achieved in a number of ways, although it might

be challenging to end a significant epidemic completely.

Some corrective steps include the following:

- Separate the birds that are severely pecking at other birds, especially if they are doing it to their vents or injuries of other birds.
- Birds affected by cannibalism should be separated and care should be taken, if necessary, euthanise them humanely.
- Use dim light to an intensity of 0.5 to 1.0 foot-candles.
- Add enrichments to the birds' environment, especially forage-related devices.
- Provide extra feeder and water space.

- Add perches to the housing environment.
- Include more nest boxes in the laying flock.
- Beak trimming is recommended.

#### **Conclusion**

Feather pecking and cannibalism causes serious economic losses in the poultry industry. Rather than treating it is easier to prevent feather pecking and cannibalism with a good management practices which is a key to the successful poultry production. If such condition occurs in the flock, then appropriate control measures should be taken as early as possible to resolve the issue.



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# Role of Probiotics in Poultry Gut Health

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*The use of Antibiotic Growth Promoters (AGP) is a widespread practice in the poultry industry to improve the performance of birds*

The poultry gut plays an important role in the overall health and growth during the estimated production phase. Certain microbial communities in the gut are essential for the host nutrition and performance. Probiotics are live microorganisms (bacteria, fungi, or yeasts) which, when administered in sufficient amounts, gives health benefits to the host. These direct-fed microbials help in maintaining a healthy digestive system by essentially supplementing the gut microflora thereby promoting growth and overall health of poultry. Some of the commonly used probiotic microorganisms under commercial poultry production include species of Lactobacillus, Lactococcus,

Bifidobacterium, Bacillus, Saccharomyces, Streptococcus and yeast such as Candida.

**Probiotics as alternatives to AGP:**

The use of Antibiotic Growth Promoters (AGP) is a widespread practice in the poultry industry to improve the performance of birds and enhance their weight-gain. It involves the addition of ionophores such as monensin, lasalocid, narasin, salinomycin and other approved antibiotics that are not intended for therapeutic use, to poultry feed. With rising public health concerns over the impact of AGPs on the emerging antibiotic resistance, it is necessary to find an alternative approach to grow healthy birds. Several feed additives



*Probiotics are progressively being incorporated in poultry diets as a recent alternative to antibiotics due to growing demand for antibiotic-free poultry.*



are being tried in poultry nutrition as alternatives to AGP with varying degrees of success

Probiotics are progressively being incorporated in poultry diets as a recent alternative to antibiotics due to growing demand for antibiotic-free poultry. Though the elimination of antibiotics compromises the performance of birds due to higher incidence of enteric diseases, the use of AGPs (eg. penicillins, tetracycline, tylosis and sulphonamides) in farm animals has been discontinued since 2006 as a step towards tackling antibiotic resistance. Some are still in use in many countries where there is sparse regulation and lack of quantitative monitoring data on AGPs.

How to select a probiotic? Selecting a probiotic strain depends on certain criteria such as desirable characteristics, tolerance to gastrointestinal conditions, ability to adhere to the gut mucosa and competitive exclusion of pathogens. Additionally, probiotics are selected based on their endurance and viability during manufacturing, transportation, storage and application processes.

**How do probiotics act?** Many commercial products incorporate multi-strain probiotics since each strain confers different levels of protection. Multi-strain and multi-species probiotics produce synergistic effects by acting on different sites with different modes of action. Certain probiotic strains have the unique ability to survive extreme acidic environments in the host. Some of the mechanisms of action of probiotics include i) competitive exclusion of pathogens, ii) secretion of antimicrobial substances, iii) organic acids production, iv) lowering gut pH, v) competitive adherence to gut mucosa vi) strengthening gut epithelium, vii) stimulating host-defense mechanisms, viii) elevated antibody production and ix) modulating immune system.

**What are the benefits of Probiotic supplementation:** Probiotics have the ability to improve nutrient utilization by altering the gut histomorphology.

*Probiotics can likely serve as prospective alternatives to Antibiotic Growth Promoters (AGP) in poultry nutrition.*



By creating physiological changes in the intestinal tissue structure such as increasing the height of villi and structure of the crypts, probiotics help to produce immunological variations in the GIT. These changes enhance the cytokine production thereby increasing the animal's resistance to pathogenic bacteria (eg. Coliforms). Probiotics have a great impact on the composition and functions of the gut microbiome. They compete with other microbes for nutrients, binding site and receptors on gut mucosa and, eventually suppress their growth by producing anti-microbial components. Probiotics also have a protective role on the damaging effect of heat stress on the intestinal barrier.

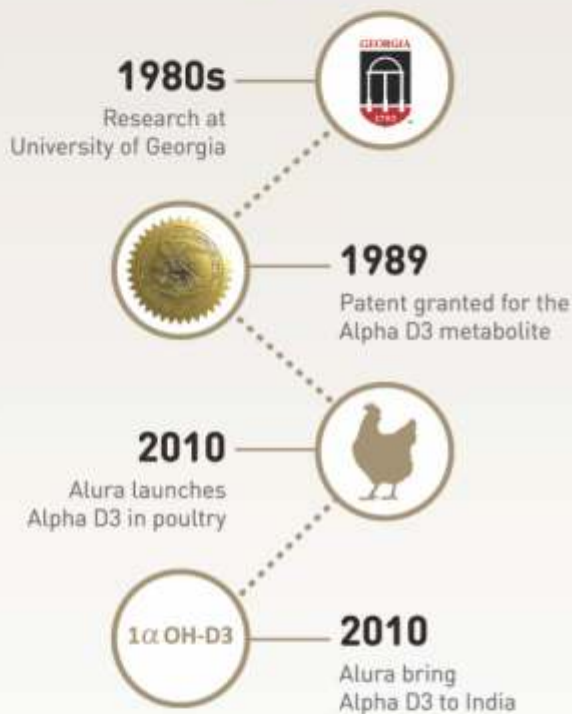
Supplementing poultry ration with probiotics can hence have the following potential benefits:

- increased beneficial microbiota in the poultry gut,
- reduced pathogen translocation and less pathogen colonization
- altered total digestibility coefficient
- increased beneficial microbiota in the poultry gut,
- reduced pathogen translocation and less pathogen colonization
- altered total digestibility coefficient
- reduced gut inflammation
- better intestinal barrier integrity and

- decreased ammonia and urea excretion
- Improved growth and laying performance
- better immune modulation and maintenance of immune tolerance

Thus, probiotics can likely serve as prospective alternatives to Antibiotic Growth Promoters (AGP) in poultry nutrition. However, factors such as the intestinal health condition of birds, the inclusion level of probiotics, the incubation condition of feedstuff and quality of water offered to birds may also determine the outcome of poultry production.

# THE ORIGINAL ALPHA D3



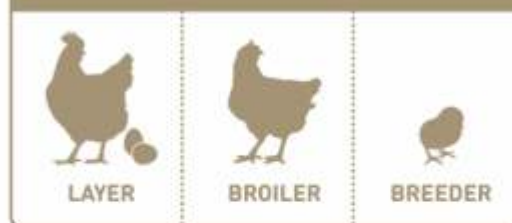
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# Vaccination Reactions in Broiler

**Dr. Mahesh Kajagar**

MVSc (Animal nutrition)

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MVSc (Animal nutrition)

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MVSc (LPM)

90 per cent of all respiratory diseases in broilers and condemnations are due to airsacculitis. The problems may arise from improper timings of vaccination, techniques, use of strong vaccine strains, improper doses or from failure to consider the effect of management stress on vaccinated birds. It is important to remember that adverse reactions to mild respiratory vaccines in broiler can appear to be every bit as severe as disease caused by field strains. Intensive vaccination programs may be implemented simply to attempt to limit losses resulting from adverse vaccine responses. In these cases, ND and IB field challenge are of little significance in adversely affecting production parameters and costs. Designing a vaccination program for an integration usually requires evaluation of production practices, laboratory analyses, and experimentation before the best program is identified. Vaccination is done to provide some degree of protection against disease if the flock is infected with a field virus. Vaccination, it is hoped, will stimulate the bird's immune system so that the immune system can respond more effectively to limit losses if a challenge occurs. In unprotected birds, losses from ND and IB are more associated with decreased body weights and uniformity, poor feed conversion, and increased condemnations. Rare infections with highly virulent Newcastle viruses or complicated ND and IB infections may result in greatly increased mortality. Each integration company has its own set of vaccination program. When designing a ND and IB vaccination program, it is necessary to

consider:

- MG infection status,
- IB and ND maternal antibody levels and uniformity of maternal titers,
- Incidence of IB and NDV field challenge,
- Virulence and serotypes of field IB and ND virus challenge,
- Status of the immune system of the birds due to infectious bursal disease or chicken infectious anaemia challenge,
- Air quality in the production houses,
- Chick quality, and many other factors.

## Vaccination reactions

The vaccine virus must infect target cells and replicate to increase their numbers to stimulate the immune system. If the vaccine is administered properly to healthy poultry, a "normal" vaccine reaction will result. Although this "normal" reaction can vary considerably.

### Normal respiratory reactions

Normal reaction to ND/IB vaccination produces clinical signs which are most noticeable at 5 to 6 days of age post vaccination. IB vaccination alone may produce clinical signs at 3 to 6 days post vaccination. Normal reactions following vaccination are characterized by a moderate snick or sneeze and possible bunching or huddling in the house. Clinical signs following reactions should be milder than those observed after one day of age vaccination. A slight increase in mortality can occur for 24 to 48 hr at the peak of reaction to one day of age vaccination. The

reaction should last about one-week reactions falling to clear up within a week are abnormal reactions

### Abnormal respiratory reactions

#### 1. No audible or visible reaction

This reaction is too mild it may indicate a poor vaccination take meaning that a substantial number of birds are still susceptible to the disease. A lack of reaction to one day of age vaccination may result in an adverse reaction. Following revaccination after 12 days of age a lack of reaction to revaccination may indicate the flock will be susceptible to a late disease break

#### 2. Heavy reaction

This may be characterized by a heavy snick or cough an increase in mortality to 2 birds per 1000 or greater, heavy suds in the air sacs and bunching and



huddling in the flocks. Clinical signs may be observed earlier than in normal reaction and may often persist beyond one week. Secondary bacterial infection often sets in.

### **3. Rolling reaction**

A rolling reaction is vaccination reaction in a flock which never stops it may start as a severe reaction or it may start with few clinical signs the main characteristic is that the birds never completely recover from a vaccination. Clinical signs may increase in severity over time and secondary bacterial infection may set in revaccinated flocks which begin to show an increase in mortality and bacterial infection between 3-2 to 5-1/2 weeks of age are often.

Any of the respiratory vaccines can roll

infectious bronchitis virus (IBV) is particularly unpredictable because it can persist in birds for prolonged periods. With virus isolation possible from the cecal tonsils of some birds as late as 14 Weeks post infection and from the feces as late as 20 weeks post infection Shedding of IBV has also been detected in hens that had been virus negative for several weeks following recovery from inoculation at one day of age. Virus was recovered from tracheal and cloacal swab

### **Factors affecting vaccination Reaction**

#### **1 Maternal antibody levels**

Maternal antibody buffers the reaction to live IB and ND vaccine. Clinical signs will be more noticeable in the progeny of hens with low levels of antibody than

in progeny of hens with high levels of antibodies. Maternal antibody does not block the local immune response in vaccinated chicks

#### **Maternal antibody uniformity**

Poor uniformity of day-old titers to ND/IB may cause uneven reactions which are linear. A normal reaction should disappear in 5 to 7 days. Lingering reactions may last two weeks or they never disappear

#### **2. Age at Vaccination**

Older birds are more susceptible to adverse effects from vaccine virus. The acceptable age range for revaccination is usually 10 to 21 days of age, but the severity of clinical signs generally increases with age. Several companies have found that reactions are too severe if birds are vaccinated beyond

17 or 18 days of age.

### 3. Dosage of Vaccine

Dosage is generally most critical at one-day-of-age, though the dosage of the field boost can become critical if the vaccination is given at the extremes of tolerance. Despite several variables, including vial-to-vial titer difference, field personnel can often see visible differences in the effects of a full dose, 3/4 dose, 1/2 dose and 1/4 dose of vaccine under field conditions.

At most companies, the vaccine dosage given at one-day-of-age is determined based upon vaccination reaction. Very few companies use a full dose at one-day-of-age. Most use a 1/2 to 1/5 dose based upon a log<sub>10</sub> titer for full dose ND vaccine. ND vaccine produces more clinical signs when given at one-day-of-age than IB vaccine, so the dosage of combination products is based upon the ND titer.

A low dosage of live vaccine can produce lingering or rolling reactions. As I work with clients, we try to find a dose which will not cause mortality or severe clinical signs (too much virus), and one which will not produce lingering reactions (too little virus). We should be able to observe reactions in chicks at 6 to 8 days of age. Birds should appear normal by 12 to 13 days of age.

### 4. Previous Exposure to Vaccine

Previous exposure to vaccine virus increases a flock's tolerance to later vaccination. The stronger the reaction to vaccination in the hatchery, the higher the probability that the field boost can be given safely at a later age.

### 5. Vaccination Method

1. Clinical signs may be more severe following vaccination by spraying than if vaccine is administered in drinking water.
2. Uneven administration of vaccine leads to "rolling" reactions. Clinical signs and mortality persist, and the reaction appears similar to lentogenic field breaks. ELISA titers can become quite high, indicating that serial bird passage may cause the vaccine virus to increase in virulence. Both ND and IB vaccine can roll, resulting in respiratory

disease

3. It is possible that field viruses or vaccine virus sub-populations are favored during these rolling reactions. Several regions across the U.S. reported outbreaks with new IBV serotypes (072 on Delmarva and Ark 99 in Georgia) following incidences of rolling IB reactions in these areas. A severe vaccine reaction increases the chances that genetic recombination may occur, and a variant strain of IBV may spread through an already-stressed flock

### 6. Vaccine Used

1. Some IB strains produce more clinical signs in broilers due to vaccination. than others: Bronchitis: Holland > Ark 99> MAS (clone) > Mass > Conn Newcastle: LaSota LaSota (clone) > B, > VG The passage level, invasiveness, and the duration of shedding are factors which influence the response of flocks to vaccine virus. The MA 5 cloned Mass strain of IBV causes less ciliostasis than standard Mass vaccines, but the virus persists in the bird for a longer period of time. The effect of this in birds being stressed is a prolonged reaction. The same product in birds under less stress (replacement pullets) will produce fewer clinical signs.
2. ND vaccine is more reactive when given at one-day-of-age. IB vaccine is more reactive in older birds (boost age).
3. The reaction to IB vaccination should be noticeable at 3 to 5 days post- vaccination. In some flocks vaccinated with IBV at one-day-of-age the immediate reaction to vaccination is very mild and a second, more severe. reaction is observed at about 21 days of age. This may be influenced by maternal antibody and persistent infection by IBV. Virus shedding by carrier birds produces a second reaction when maternal antibody titers wane.

This type of reaction is most common when IB vaccine is used alone, or when a less attenuated strain of IB vaccine is used in combination with a milder ND vaccine.

### 7. Stress Levels

Stresses such as marginal nutrition, marginal ventilation, rapid turn-around time, high density placement and rapid growth rate all influence how much vaccination stress a bird will tolerate. The vaccination stress factors themselves are additive frequently see good respiratory vaccination programs appear to break down during seasonal ventilation changes or during periods when poor quality feed ingredients are used.

### 8. Vaccination Technique

#### A. Hatchery Vaccination

1. Spray Cabinet (and on-line spray systems) The spray cabinet is the most common method for administration of ND and IB vaccines in the hatchery. It is a very effective method for the administration of respiratory vaccines, as long as the procedure is done correctly and the cabinet is operating properly.

The vaccinating crew should make sure that the spray is triggered correctly, and only once, for each box of chicks. The chicks should stay in the cabinet long enough for the spray to actually hit them before the box is pulled out of the cabinet. Often the chick bus driver finishes a group of chicks because he is in a hurry to get them loaded and transported to a growing house. If he is too fast, he can actually shove a box in and out of the sprayer so that the sprayer is triggered but spray never hits the box. The spray cabinet is an ideal place to spread bacterial infection to all of the chicks if the cabinet is not properly cleaned. Bacterial checks of the spray cabinet should be routine. Use of gentamicin (200 mg per gallon of diluent) will help keep contamination to a minimum during operation.

#### B. Field Vaccination

All of the field vaccination procedures are designed to get at least a minimum protective dose of vaccine to each and every bird in the house at the time of vaccination. Birds left unexposed at the time of vaccination may pick up the virus from the vaccinates following vaccination. If there are very few birds missed, you might only see an "echo" reaction. If there were many birds unexposed, the potential for a rolling





reaction is very great.

Complete step-by-step procedures for spray and water vaccination, plus information on the importance of vaccination technique,

The accuracy of vaccination can also be checked using Dye Tablets. This dye, when used at the rate of one tablet per three gallons of water, will produce a blue tongue or a blue crop in vaccinated birds. The percentage of vaccine takes can be determined by observing 50 to 100 birds at intervals throughout the house. The dye should be used whenever new procedures are established, or when individual farms are suspected of having problems with vaccine administration.

### **9. Rolling Reaction vs. Field Challenge**

There is no way to distinguish between a rolling vaccination reaction and a field challenge by serology alone. The

pattern and the degree of serological responses can be identical. Vaccine does not necessarily produce lower antibody titers than a field virus: Both can produce a remarkably strong serological response. Distinguishing field challenge and rolling vaccination reactions depends upon field observation and knowledge of vaccination program: If flocks completely clear a reaction and are quiet between 3-1/2 and 5-1/2 weeks and then break, the break is from field challenge. Early respiratory disease is almost always due to vaccine. Exceptions: IB breaks may occur earlier if IB vaccine is only given at one-day-of-age, and extremely virulent variant viruses may break in flocks before 5 weeks of age if the vaccination program does not provide strong protective immunity.

Extremely virulent variant viruses present a unique challenge: They may

be created or induced by live-virus vaccination programs which cause severe reactions. Approach these problems with clean-out, layout and correction of vaccination-induced problems all at once.

### **10. Late Field Breaks**

Flocks which break with respiratory disease late in the production cycle may not have sufficient time to produce a serological response. Blood samples from a late-breaking flock at processing age may reflect what is happening with the vaccination program, but may not contain antibody resulting from the field challenge. A sample of birds from late-breaking flocks should be held in isolation for an additional two weeks to allow a serological response to the actual field challenge to develop.

Note that it is common to see a broad range of antibody titers to IBV (rather

than grouped) regardless of whether a rolling reaction or field challenge causes the response.

## 11. Troubleshooting Respiratory Problems: Summary

### 1. Always rule out vaccine-induced respiratory disease first!

Assume vaccination is causing the respiratory problems on any given broiler farm or complex until it is definitely ruled out. Vaccine-induced respiratory disease accounts for at least 90% of the airsacculitis condemnation I see across the country. Another 9.9% is caused by late disease breaks due to the improper timing of vaccinations or inadequate coverage. Only rarely, do I

find a true variant virus that the existing vaccines, when used appropriately, cannot protect against.

### 2. Use serology plus field observation.

- Serology (ELISA, plus HI or virus neutralization (VN) where appropriate) will give you an idea as to which virus might be causing the problem so weaknesses in coverage can be corrected, or rolling vaccine viruses can be identified.
- Always combine serologic data with field observations at each of the critical observation points. Serology taken out of context is meaningless because flocks with adequate

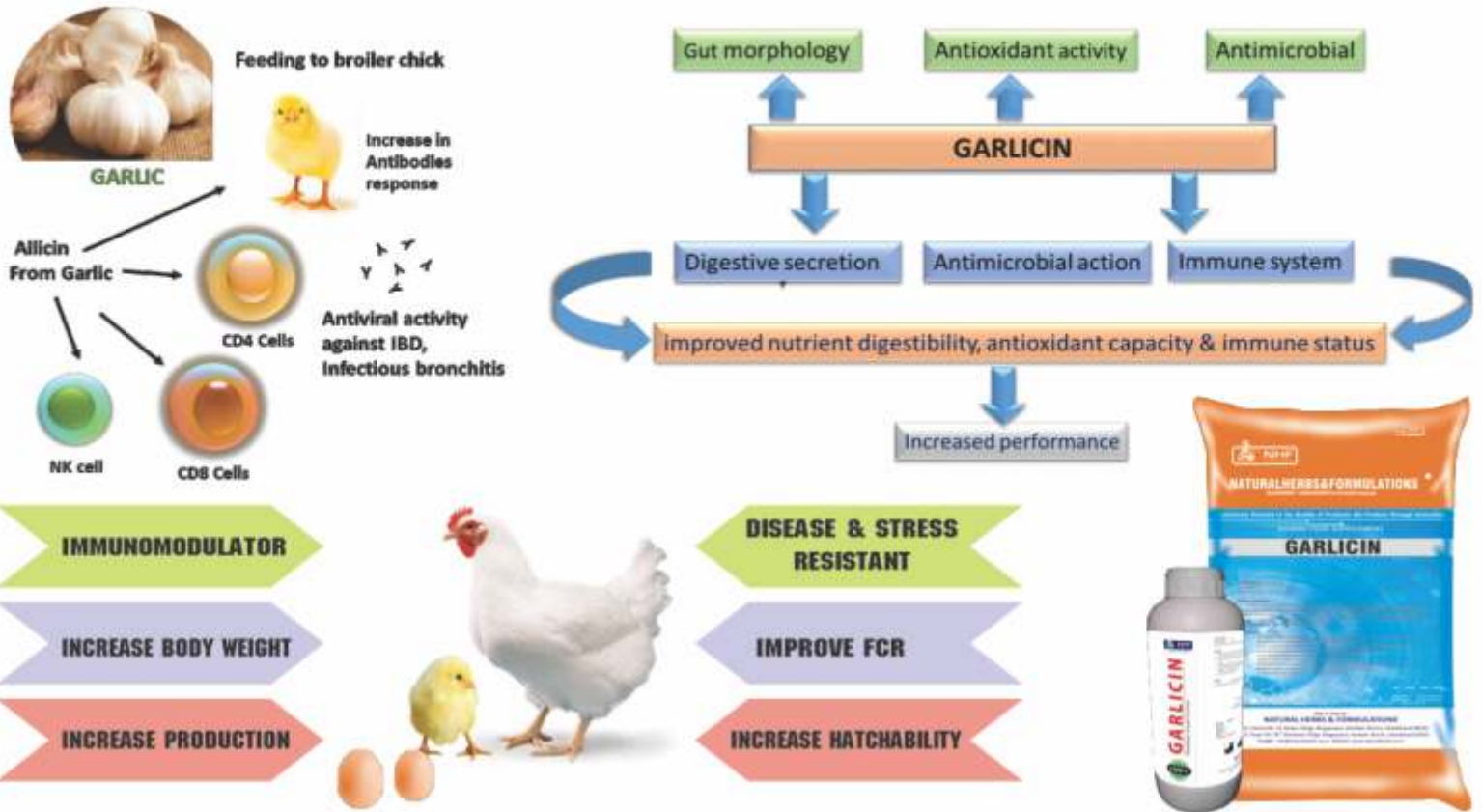
immunity may still respond serologically to challenge

- Remember the timing of your blood sampling! Processing-age samples may only show vaccination responses. Seroconversion will peak two to three weeks post-challenge. A convalescent sample is necessary for serology to aid in diagnosis.
- Don't look for serological responses to respiratory disease vaccination in broilers. Local immunity with minimal humoral response is normal. Greater serological responses to vaccination could indicate that vaccine is hitting flocks hard and could affect performance.



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# Turning Turkey Frowns Upside Down

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Europeans in the sixteenth century were like, "Hey, let's start breeding turkeys at home!" Then the Brits and Spanish were all like, "Yo, let's eat turkey for Christmas!" and shared their turkey-eating ways with other countries. Now in India, some small farmers who got kicked out of the broiler market are turning to turkey farming for work because people want more food choices. And frozen food? That's becoming a thing there too.

Institutions in India, such as the Central Avian Research Institute in Izatnagar, Uttar Pradesh, the Department of Animal Husbandry in Kerala, the Central Poultry Breeding Farm in Hessarghatta, Karnataka and the Poultry Research Station, Nandanam of Tamil Nadu Veterinary and Animal Sciences University, Chennai and Haryana Agricultural University, Hisar, are promoting turkey production among Indian farmers. Wow! That's



<b>Nutrients requirements of turkeys</b>			
<b>Age (weeks)</b>	<b>Type of feed</b>	<b>Crude Protein (%)</b>	<b>ME (Kcal/kg)</b>
0 - 5	Starter diet	28	2800
6 - 8	Grower-first diet	26	2800
9 - 12	Grower-second diet	22	3000
13 - 16	Market age Finisher diet	16	3300
13 - 24	Holding/pre-layer diet	12	2750

a lot but that's a good sign.

### **Intensive system**

The care of turkeys is comparable to that of chicken. Cement flooring are ideal, and the structure should be situated in an elevated area.

### **Management of turkey poults**

Turkey's scientific name is *Meleagris gallopavo*. Early in the brooding period, turkey poults grow very slowly and do not actively seek food. They should therefore not be cramped and should be directed towards eating. For the first three to four weeks, each poult needs about 900 cm<sup>2</sup> of floor space, and from then on until eight weeks, that space is raised to 0.135 m<sup>2</sup> per poult. 100 pups up to four weeks old can be housed in a 3 × 3 m compartment. They are moved to a 3 × 4.5 m compartment for additional floor brooding till 8 weeks.

From 9 to 12 weeks of age, the floor area per growing poult must be increased to 0.18 m<sup>2</sup>. After sixteen weeks, they need 0.36 m<sup>2</sup> of room per chick. The minimum floor space limit for a poult is 0.23 m<sup>2</sup>. The floor space needs may be slightly less for little turkey breeds. Due to the range system's minimal

requirement for a shelter to shield them from rain and sunlight, the floor space is decreased by roughly one-third. During the first week of brooding, turkey poults must also be kept at a temperature of 95°F. When the temperature in the brooder reaches 70°F, it is possible to reduce it by 50°F each week; in the winter, artificial heating may be turned off after the sixth week. Around 10 days after birth, debeak the chicks. Using an electric debeaker, trim the top beak so that it is midway between the tip and the nostrils.

### **Feeding of turkeys**

In comparison to other commercial avian species, turkey flesh contains a very little amount of fat. As a result, compared to other species, turkey diets have a lower calorie to protein ratio. Although balanced feed for turkeys may not be as readily available commercially as feed for chickens, seasoned farmers can easily prepare their own feed in consultation with a poultry nutritionist. Because turkeys need more protein, minerals, and vitamins than chickens to support their growth, turkey rations are more expensive than chicken rations. As the energy and protein

needs of the two sexes differ, it is possible to raise them separately for better outcomes. When it comes to feeding, poultry present greater challenges than hens. After hatching, feeding them as soon as possible is ideal.

### **Semi intensive range in poultry**

Turkeys are also reared under range systems in the backyards of rural households.

- Popular commercial production is through a semi-intensive system. Under this system, turkey poults are reared up to four to six weeks of age in closed, confined houses, after which they are allowed to forage for a few hours in an open yard during the day and then housed in the shelter for the rest of the day and night. Growers and breeders are reared under this type of semi-intensive system. Strutting behaviour is normally observed in Toms than female Turkeys.
- When the turkeys forage, they consume the sparse cultivated grass and greens available in the open yard and the feed cost is reduced. The farmers claim that they are able to get better



fertility and hatchability under the semi-intensive system than under the intensive system.

- The feeders and drinkers are provided inside the shelter in a shaded environment.
- Turkeys are better foragers and digest fibre better than chicken. Therefore they are fed with cut legumes like lucerne (alfalfa), Stylo, etc., in the yard, which reduces the feed cost.

#### **Diseases in turkey**

Marek's disease and infectious bronchitis (IB) have no effect on turkeys. There is a moderate form of coccidiosis, fowl pox, and newton disease. Mycoplasmosis, fowl cholera, erysipelas, and

perhaps haemorrhagic enteritis and avian influenza are among the illnesses that are frequently seen in turkeys. Turkeys are vaccinated to prevent erysipelas and chicken cholera.

The disease can be avoided or decreased by using Mycoplasma-free turkey breeding populations and by dipping the hatching eggs in antibiotic solutions. Mycoplasmosis, which is caused by Mycoplasma meleagridis, is challenging to control since it is spread by eggs and semen (Gentamicin or Tylosin) When a disease outbreak occurs, sick birds must be kept apart. If the epidemic happens while the birds are in the brooding stage, the brooder house

must be carefully cleaned.

#### **Conclusion**

Turkey farming has a lot of potential in India because it may be done in semi-intensive or free-range systems, particularly in rural areas where it can help marginal and small farmers and landless labourers improve their economic situation. turkeys are raised using a free-range approach. It is a practical and sustainable bird from an economic point of view for both backyard and commercial ventures, requiring little investment in buildings and equipment. Turkeys are ideal for the tropical environment of the Indian subcontinent.

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# Why Vaccinating Your Flock is No Yolk

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Listen up, fellow poultry pals! Did you know that we're part of the largest animal protein industry in the world? That's right - we're top dogs, er, top chickens! Globally, folks consume more than 130 million metric tons of our meat and over 86.67 million metric tons of our eggs. In India alone, our sector is worth a whopping Rs. 80,000 crores! And get this - we come in two varieties: the fancy commercial type (80% of the market share) and the cool, laid-back backyard variety (20% of the market share). Backyard poultry is especially popular in rural areas, where they're known to be women-run and help out with pest control and fertilizer. Plus, they give us all an egg-cellent source of nutrition!

But there's a flip side to our clucking success story. The risk of viral diseases like Newcastle disease, avian influenza, and infectious bronchitis is on the rise, thanks to globalization. These baddies can wreak havoc on our industry and cause a serious dip in our meat and egg production. Yikes! Luckily, there are ways to protect ourselves. Vaccination is key, my feathered friends! It helps boost our immunity and protect us from specific diseases. But let's be real - vaccines aren't a magic shield. We need to keep up with disease

prevention management and hygienic practices at the farm level to minimize risks. With some careful attention, we can keep our flocks healthy and happy - and keep those eggs coming!"

## Types of Vaccination

Vaccination comprises the use of attenuated, killed, or recombinant organisms for stimulation of the body's immune response that recognizes the injected organism as a foreign antigen, resulting in clearing the antigen and developing memory cells in the body. Vaccination is the cheapest, reliable, effective, economical, affordable and suitable alternative for prevention of diseases in poultry flocks. The scientific basis for the use of this strategy is the generation of protective immunity in the target population that can be boosted in case of immediate risk or evidence of introduction of a field virus. Different vaccination methods include; Routine vaccination (endemic diseases), Emergency vaccination (massive and rapid spread of infection to the unaffected area) and Preventive vaccination (contagious poultry disease).

## Causes of vaccine failure

Two major factors which play an important role in vaccination are

**Vaccination schedule for poultry birds (broiler) (Expert System on Poultry, ICAR-TANUVAS-TNAU)**

Sl. No.	Age of birds	Disease	Vaccine	Doses	Route
1.	Day one	Marek's	HVT and MD	0.2 ml	S/C
2.	5th day	Ranikhet	Lasota	One drop	Eye or nostril
3.	12th day	Gumboro	Intermediate plus	One drop	Eye or nostril
4.	24th day (Booster)	Gumboro	Intermediate plus	--	Drinking water
5.	28th day (Booster)	Ranikhet	Lasota	--	Drinking water



antigen factor and host response. Antigen factors include improper formulation of vaccine, variations in strains of viruses, improper storage of vaccines, direct exposure to sunlight, usage of expired vaccines. Host factors like cold stress, heat stress, high humidity, transportation, intensive farming, very high stocking density/overcrowding, low ventilation, poor litter conditions, accumulation of bad smell in sheds and poultry houses, off feeding, water deprivation, poor management, bad sanitary conditions, very wet or extremely dry litter, dusty environment, parasitism, nutritional deficiency, fever, and so on. In these cases, there can also be vaccine failure in livestock.

### Prevention of vaccine failure

The following procedures can prevent vaccine failure and can produce effective immunization post-vaccinations in poultry flocks:

- Different factors that should be taken into account are- the type of poultry production (e.g., commercial or rural), the organisation of the industry (e.g., vertical integration), the stock and species densities, the prevailing diseases, availability of vaccine, the

use of other vaccines, the resources available (e.g., manpower and equipment) and the costs involved. The local strains of antigens must be used for manufacturing of vaccines.

- Raising awareness about the detrimental impact of major poultry diseases is crucial. To mitigate losses, it is imperative to vaccinate village poultry using suitable hygiene and logistical/management practices, including maintaining a consistent cold chain for the product. In other words, protecting your flock from disease is not just good practice - it's vital for their survival and your success. By staying informed and implementing proper vaccination and hygiene protocols, you can ensure the health and prosperity of your village poultry. So let's take action and keep those chickens clucking!
- Adequately planned and managed rural poultry vaccination programmes (e.g., against ND and Gumboro disease) can significantly reduce mortality and increase poultry production.
- The dosage of vaccinal antigen

and properly processed vaccines provide good results and prevent vaccine failure.

- Direct exposure to sunlight should be avoided and for oral vaccines the cap of the vaccine vial should be opened inside water for the oral or parental vaccines.
- The vaccines should be mixed in drinking water in a room or in a shady place; black or colored bags and cartons should be used to prevent sunlight affecting the vaccine during the transportation.
- The use of expired vaccines should be avoided. The vaccines must be utilized as early as possible after its reconstitution in diluents, etc. Once the vaccine is reconstituted, the time limit is set.
- The adult birds dewormed at least 15 days before injection of vaccine.
- The temperature of the environment and sheds should be normal before vaccination to avoid stress on the birds.
- Balanced feed is a must and fungal growth in feeds especially during summer.
- Vaccination should be done

### Vaccination schedule for poultry birds (layers) (Expert System on Poultry, ICAR-TANUVAS-TNAU)

Sl. No.	Age of birds	Disease	Vaccine	Route
1.	0 day	Marek's	Marek's Disease Vaccine (HVT)	S/C
2.	5-7 days	Ranikhet	Ranikhet Disease Vaccine- RDVF	O/N
3.	12 - 14 days	Infectious Bursal	Infectious Bursal Disease Vaccine	O/N or water
4.	18 - 22 days	Infectious Bronchitis	Infectious Bronchitis Disease Vaccine	O/N or water
5.	24 - 27 days	Infectious Bronchitis	IB Vaccine Booster	water
6.	28 - 30 days	Ranikhet	RD vaccine Booster- La Sota	Water
7.	6th week	Fowl Pox	Fowl Pox Vaccine or Infectious Coryza Vaccine	S/C
8.	8th week	Ranikhet	RD vaccine- RDVK or R2B	S/C or I/M
9.	9th week	Fowl Pox	Fowl Pox Vaccine	Wing web
10.	12 - 13th week	Infectious Bronchitis	IB Booster	Water
11.	18th week	Ranikhet	RD Booster- RDVK or R2B	S/C or I/M
12.	45th - 50th week	Ranikhet	RD La Sota repeated every once in 2 Months	water

according to the age of the bird (as prescribed in the table) and proper schedule should be followed.

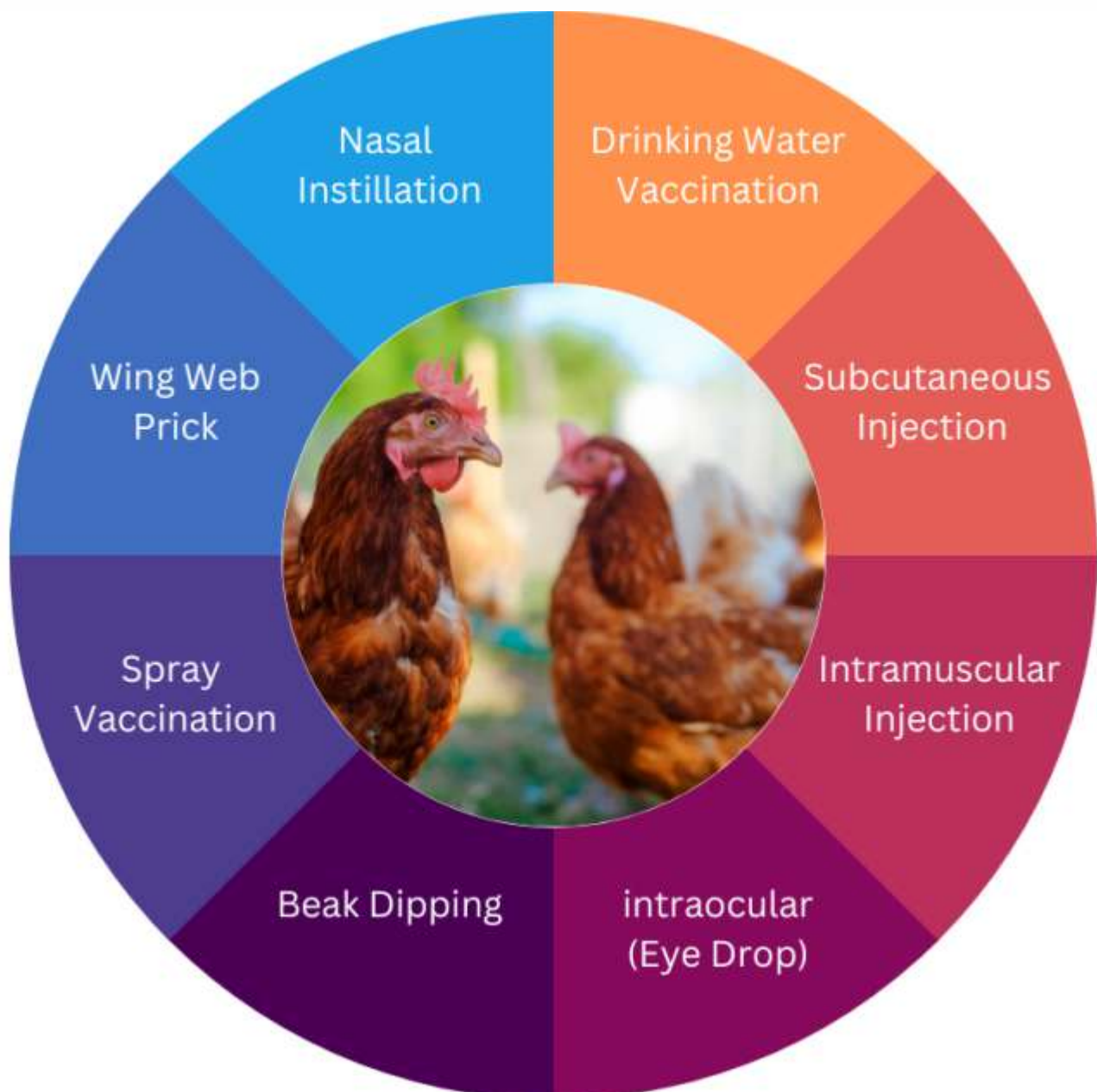
- The stabilizers like Vac-Safe (Intervet), Vital Blue, etc. can be used for oral live vaccines like ND, IBD, IB, etc. of poultry. The skimmed milk at the rate of 2 g/L can also be added as a suitable alternative stabilizer.
- Vitamin and mineral supplements help to develop immune response.

Vitamin A, C, E and Selenium ensure better immune response of birds to vaccination. Use of vitamin E, selenium and levamisole in feed which help in preventing vaccine failure.

- The booster dose wherever mentioned is required after 10 - 20 days of the initial dose.
- Commercial and backyard farms are burdened with the ongoing difficulty of supplying the vital supply of animal protein for human use in the middle

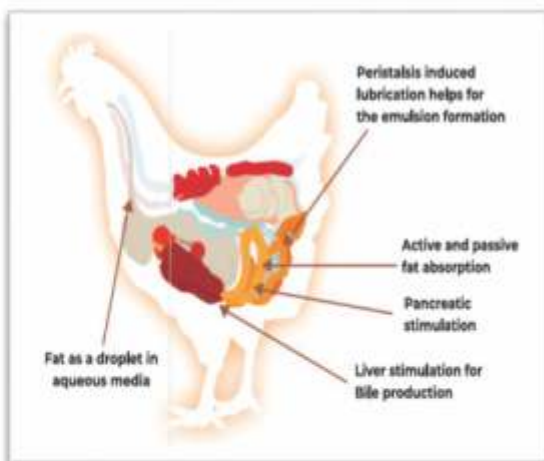
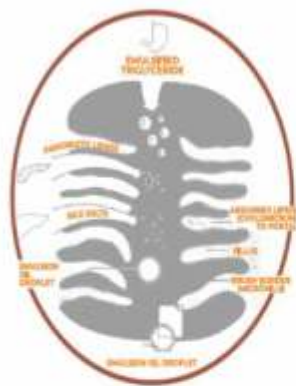
of the rising demand for chicken meat and products globally. The only way we can assure that the demand for poultry products is supplied globally is through vaccination. It is crucial to underline that, although vaccination is a useful tool, it shouldn't take the place of sound management strategies and biosecurity precautions to stop the spread of contagious diseases. Several management techniques can be used depending on the needs of various types of poultry enterprises.

### Different routes of Vaccination



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# Antimicrobial Resistance – A Global Threat

**Bhavana Gupta**  
Editor-in-Chief

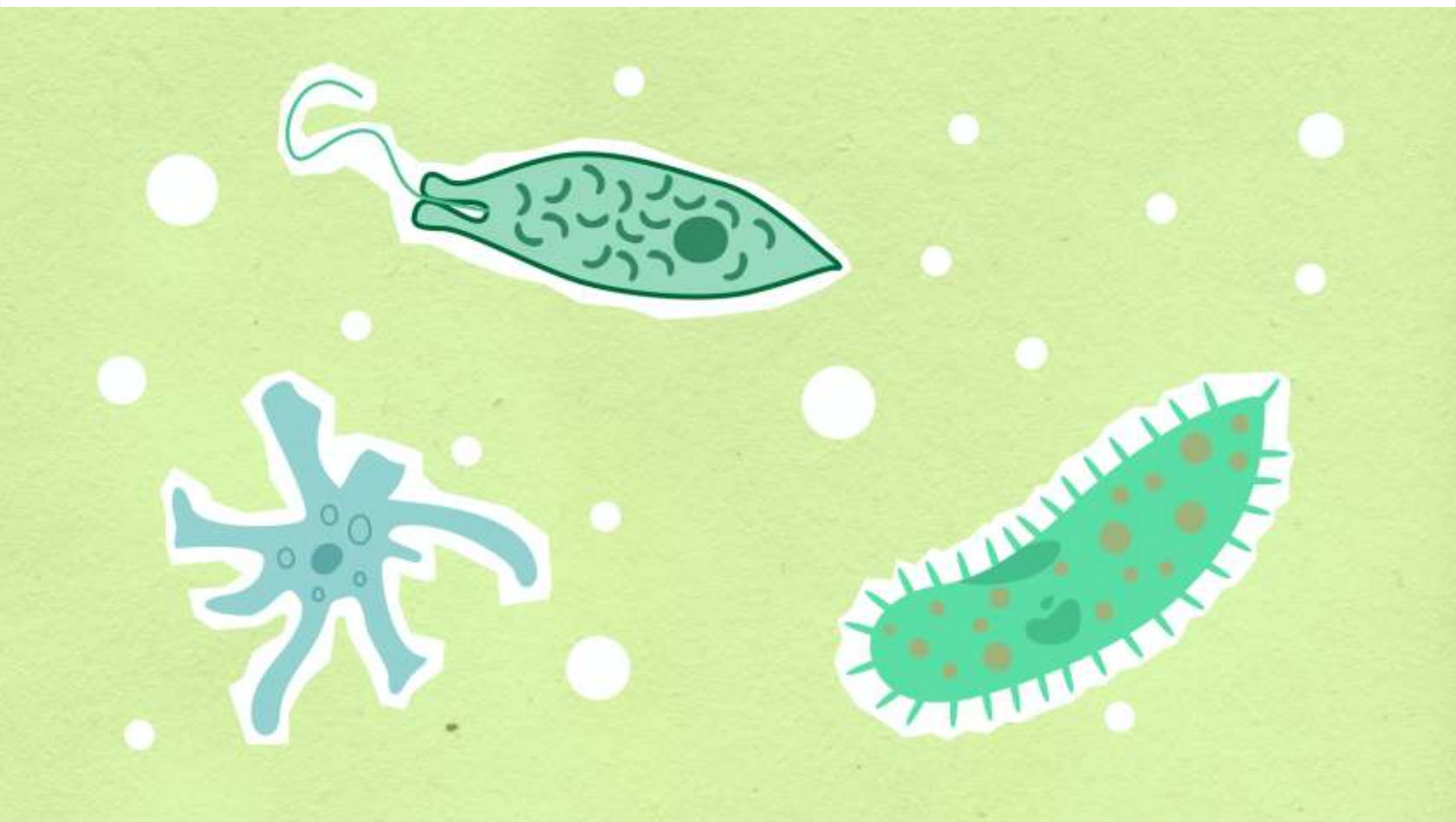
AMR (Antimicrobial Resistance) is a growing concern in poultry production as it poses a risk to both animal and human health. Poultry are commonly treated with antibiotics to prevent and treat bacterial infections, but the overuse and misuse of antibiotics can lead to the development of antimicrobial-resistant bacteria in poultry.

Antimicrobial-resistant bacteria can spread from poultry to humans through the consumption of contaminated meat or through direct contact with live birds, leading to infections that are difficult to treat with antibiotics. In addition, the use of antibiotics in poultry production can contribute to the overall problem

of antimicrobial resistance, making it harder to treat infections in both humans and animals.

To address the issue of AMR in poultry production, it is important to implement good animal husbandry practices, such as proper hygiene and bio-security measures, to prevent the spread of bacterial infections. It is also important to use antibiotics judiciously and only when necessary, and to follow appropriate withdrawal periods to ensure that no antibiotic residues are present in the meat.

Additionally, alternative methods of disease prevention and treatment, such as vaccination and probiotics, can be used to reduce the use of antibiotics in poultry production and



decrease the risk of AMR. It is crucial to work towards sustainable and responsible practices in poultry production to minimize the impact of AMR on both animal and human health.

1. Good animal husbandry practices: Proper hygiene, biosecurity measures, and management practices can reduce the incidence of bacterial infections in poultry, which can reduce the need for antibiotics.
2. Vaccination: Vaccines can be used to prevent bacterial infections in poultry, reducing the need for antibiotics.
3. Probiotics: Probiotics are beneficial bacteria that can be added to poultry feed to promote gut health and reduce the risk of bacterial infections.
4. Alternative treatments: There are many alternative treatments available for bacterial infections in poultry, such as herbal remedies and essential oils, which can be used instead of antibiotics.
5. Education: Educating farmers, veterinarians, and consumers about the risks of AMR and the importance of responsible antibiotic use can help to reduce the incidence of antibiotic resistance.

The Indian government has taken several steps to address the issue of AMR in poultry production. These include:

1. National Action Plan on Antimicrobial Resistance: The Indian government has developed a National Action Plan on Antimicrobial Resistance that includes strategies to reduce the use of antibiotics in poultry production and promote responsible use of antibiotics in all sectors.
2. Regulation of antibiotic use: The use of antibiotics in poultry production is regulated by the Central Drugs Standard Control Organization (CDSCO) under the

Ministry of Health and Family Welfare. The CDSCO has issued guidelines on the use of antibiotics in food animals, including poultry.

3. Monitoring of antibiotic resistance: The Indian government has established a national network of laboratories to monitor the prevalence of antibiotic resistance in human and animal populations. This network includes the Indian Council of Agricultural Research-National Institute of Veterinary Epidemiology and Disease Informatics (ICAR-NIVEDI), which monitors the prevalence of antibiotic resistance in poultry.

The Indian government has also established a task force to develop guidelines for the prudent use of antibiotics in animal husbandry. The task force is composed of experts from various fields, including veterinary medicine, microbiology, and public health.

The Indian government has also taken steps to promote the use of probiotics as an alternative to antibiotics in poultry production. For example, the Ministry of Agriculture and Farmers Welfare has established a National Centre for Probiotics that provides research and development support to the probiotics industry.

To promote responsible use of antibiotics, the Indian government has also launched a "Green Good Deeds" campaign that encourages individuals and organizations to adopt environmentally friendly and socially responsible practices. This campaign includes guidelines on the responsible use of antibiotics in agriculture and animal husbandry.

The "Green Good Deeds" campaign is an initiative of the Indian government that was launched in January 2018. The campaign aims to promote environmentally friendly and socially responsible practices among individuals and organizations. The campaign encourages people to adopt simple

and sustainable practices in their daily lives that can contribute to a greener and cleaner environment.

The "Green Good Deeds" campaign includes several guidelines on responsible use of antibiotics in agriculture and animal husbandry. The campaign emphasizes the importance of reducing the use of antibiotics in agriculture to prevent the emergence and spread of antibiotic-resistant bacteria. The guidelines provide information on alternative treatments, such as probiotics and herbal remedies, that can be used instead of antibiotics.

The campaign also highlights the importance of good animal husbandry practices, including proper hygiene, biosecurity measures, and management practices, to prevent bacterial infections in poultry and reduce the need for antibiotics. The guidelines provide information on the best practices for poultry production, such as maintaining clean and dry housing conditions, providing good ventilation, and using quality feed and water.

Overall, the Indian government has taken significant steps to address the issue of AMR in poultry production. However, there is still much work to be done to promote sustainable and responsible poultry production in India and reduce the risk of AMR.

Antimicrobial resistance (AMR) is a growing concern in the poultry industry that has significant implications for human health. The overuse and misuse of antibiotics in poultry farming have contributed to the emergence of resistant bacteria that can cause infections in both humans and animals.

To address this issue, it is crucial to implement strategies that promote responsible use of antibiotics in poultry farming. This includes improving biosecurity measures to prevent the spread of diseases, promoting the use of alternative

methods to control infections, and reducing the need for antibiotics through vaccination and better animal husbandry practices.

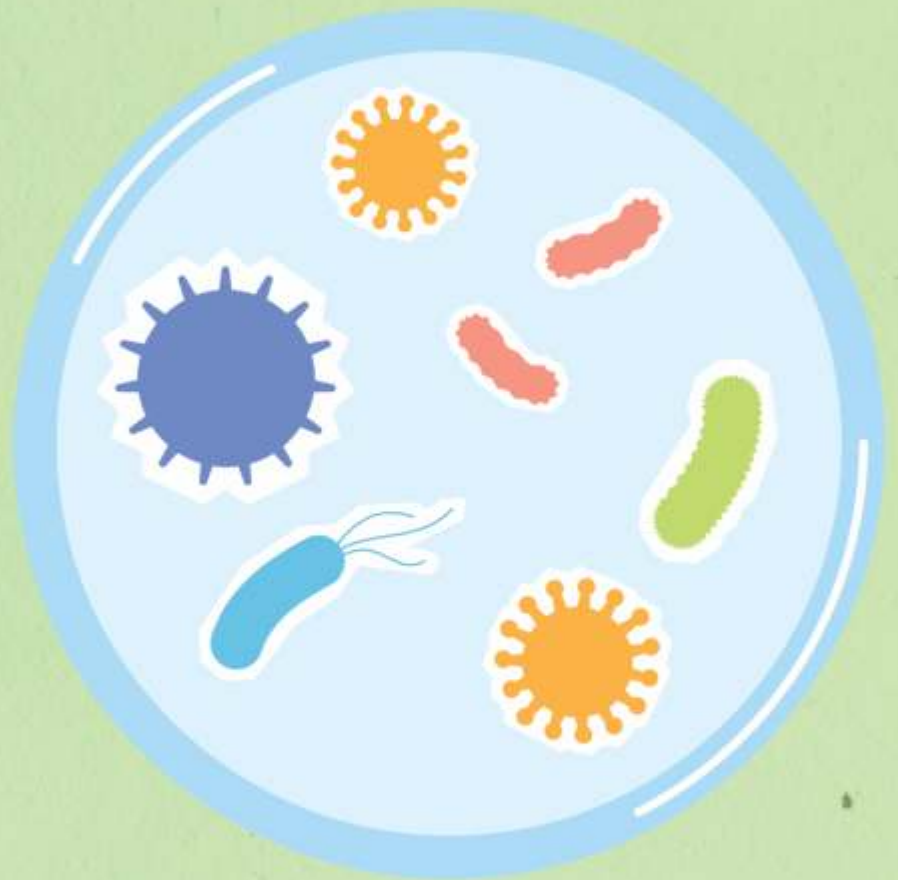
Moreover, it is essential to raise awareness among consumers about the risks associated with antimicrobial resistance and encourage them to make informed choices when purchasing poultry products. Consumers can choose to support farmers who use responsible antibiotic practices and purchase poultry products labeled as "raised without antibiotics" or "organic."

Ultimately, addressing antimicrobial resistance in poultry requires a coordinated effort from all stakeholders, including farmers, veterinarians, policymakers, and consumers. By working together, we can promote sustainable and responsible practices in the poultry industry and safeguard the health of both animals and humans.

In addition to these measures, there is also a need for increased surveillance and monitoring of AMR in the poultry industry. This can help to identify trends and patterns of resistance and inform the development of effective interventions.

It is also important to recognize that antimicrobial resistance is a global problem that requires international cooperation and collaboration. Many of the bacteria that cause AMR in poultry can be transmitted across borders, making it essential to work together to develop global strategies to combat this issue.

In conclusion, the emergence of antimicrobial resistance in poultry is a complex and multifaceted problem that requires a comprehensive and collaborative approach to address. By promoting responsible antibiotic use, improving biosecurity measures, and increasing surveillance and monitoring, we can work towards a more sustainable and healthy future for both animals and humans.



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**Archit Sharma**  
Assistant Editor

# The Journey of an Egg: From Farm to Home



The journey of an egg from the farm to our homes is an intricate process that involves multiple stages and people. The process starts with the hens laying eggs in the farms and ends with the eggs reaching the supermarkets or stores where we purchase them.

The journey begins at the poultry farm where hens lay eggs. These farms can range from small family-owned farms to large commercial farms that house thousands of hens. The eggs are collected by workers or automated systems and are immediately taken to a storage room where they are kept at a temperature of around 45°F. This temperature helps to preserve the quality of the eggs.

From the storage room, the eggs are sorted by size, weight, and quality. This ensures that the eggs that are packed and sold are of uniform quality. The eggs are then washed with warm water and disinfectant to remove any dirt or bacteria on the surface of the eggshells.

Once the eggs have been sorted and washed, they are packed into cartons. The cartons come in different sizes, ranging from a dozen to 30 eggs per carton. The cartons are then labeled with the date of packing, the grade of the eggs, and the farm's name or logo. The labeling helps to identify the eggs' freshness and origin and also helps in tracing them back to the farm if necessary.

After packing, the eggs are loaded into refrigerated trucks that transport them to distribution

centers. These centers act as a hub for egg distribution and serve as a central point for the collection and dispatch of eggs to various retail stores and supermarkets.

At the distribution centers, the eggs are once again checked for quality and freshness. Any eggs that do not meet the quality standards are removed and discarded. The eggs that pass the quality check are then loaded into refrigerated trucks and dispatched to different stores and supermarkets.

The stores and supermarkets then receive the eggs and store them in refrigerated storage units. These units ensure that the eggs remain fresh and maintain their quality until they are sold to customers. The eggs are then displayed in the egg section of the store or supermarket for customers to purchase.

When a customer purchases eggs, they usually check the expiration date on the carton to ensure that the eggs are still fresh. Once the customer takes the eggs home, they should be stored in the refrigerator to maintain their freshness and quality.

Beyond the supermarket, eggs can also be delivered directly to homes through online grocery services or local farmers markets. Some consumers may choose to buy their eggs from local farmers, where they can ensure that the hens are raised in a humane and sustainable manner.

Moreover, eggs are versatile ingredients that can be used in many dishes, such as omelets,



cakes, and salads, making them a staple food in many households. Eggs also provide many essential nutrients such as protein, vitamins, and minerals, making them a healthy addition to any diet.

However, it is important to handle eggs properly to prevent foodborne illnesses. To ensure safety, it is recommended to wash your hands before and after handling eggs, store them in the refrigerator, and cook them thoroughly before consuming. It is also advised to check the expiration date before using them in any recipe.

In conclusion, the journey of an egg from the farm to our homes is a complex process that involves multiple stages and people. From the hens laying the eggs on the farm to the eggs being sold in supermarkets or delivered directly to homes, there are many factors to ensure that the eggs remain fresh, of good quality, and safe to consume. So, whether you purchase your eggs from a local farmer or a supermarket, always appreciate the journey they took to reach your plate and handle them with care.

*To ensure safety, it is recommended to wash your hands before and after handling eggs, store them in the refrigerator, and cook them thoroughly before consuming.*

*Photo: Karolina Grabowska*



# Cracking the Code

## Solving the Poultry Industry's Biggest Problem

In a recent survey conducted on LinkedIn, professionals within the poultry industry were asked to identify the primary challenges facing their industry. The results revealed that economic sustainability is the most pressing concern, with 56% of respondents indicating that high feed costs, price fluctuations, and competition from other meat products are the primary culprits.

Disease outbreaks were also identified as a significant issue, with 22% of respondents reporting that they pose a considerable threat to production efficiency, bird welfare, and profits. Antibiotic resistance ranked third on the list of concerns, with 12% of respondents highlighting the need for alternative solutions to promote bird health.

Finally, quality control and food safety ranked fourth, with 10% of respondents emphasising the need for strict adherence to industry standards and regulations to ensure safe and high-quality poultry products.

With these challenges in mind, the poultry industry must seek innovative and effective solutions to maintain economic sustainability, combat disease outbreaks, address antibiotic resistance, and uphold food safety and quality control standards. By doing so, the industry can continue to thrive and meet the expectations of consumers, regulators, and other stakeholders.

The poultry industry faces several challenges that are affecting its growth and stability. These include economic sustainability, disease outbreaks, antibiotic resistance, and quality control and food safety. To address these challenges, the industry needs to adopt several strategies.

Firstly, to promote economic sustainability, the industry needs to

develop sustainable business models. This includes diversifying product offerings, exploring new markets, and investing in technology and innovation to improve production efficiency and reduce waste. Collaboration with stakeholders, including government agencies, is also essential in promoting favourable policies and regulations.

Let's analyse this obstacle in detail.

Economic sustainability is a significant concern for the poultry industry. As one of the most consumed sources of protein worldwide, the industry plays a crucial role in the global food supply chain. However, rising feed costs, price fluctuations, and competition from other meat products are just some of the challenges the industry faces. The economic sustainability of the industry depends on its ability to address these challenges effectively.

Feed costs are a significant contributor to the overall cost of poultry production. The cost of feed can account for up to 70% of the total cost of production, making it a critical factor in the industry's economic sustainability. Factors such as droughts, floods, and other weather-related events can significantly affect the supply and cost of feed ingredients, leading to price fluctuations and reduced profitability.

Another significant challenge facing the poultry industry is competition from other meat products. Consumers are becoming increasingly health-conscious, and many are turning to plant-based protein alternatives. This trend has led to increased competition between poultry and other meat products, putting pressure on the industry's profitability.

In addition to these challenges, the poultry industry is also facing pressure to improve its environmental

# 4 Major Problems Facing the Poultry Industry

22%

## Disease Outbreaks

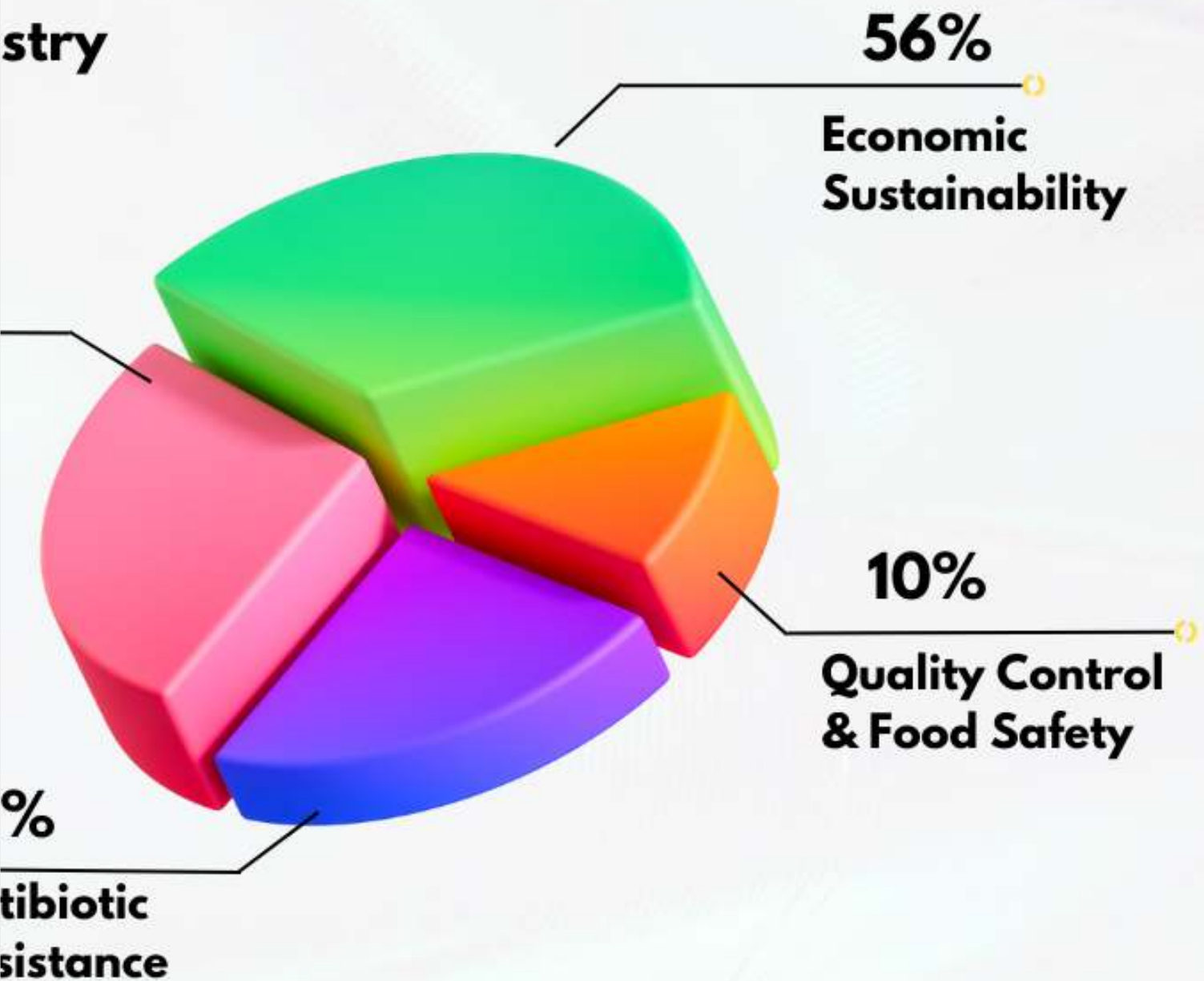
12%

## Antibiotic Resistance

sustainability. Poultry production has a significant environmental impact, with issues such as water pollution and greenhouse gas emissions being of concern. As consumers become more environmentally aware, the industry must address these issues to maintain its economic sustainability.

To address these challenges and ensure economic sustainability, the poultry industry must adopt a strategic approach that focuses on innovation, efficiency, and collaboration. One key

# blems in the stry



strategy is to invest in research and development to develop new and innovative feed ingredients that are cost-effective, sustainable, and meet the nutritional needs of birds. By developing new feed ingredients, the industry can reduce its reliance on traditional feed ingredients, such as soybeans and corn, which are subject to price fluctuations and supply chain disruptions.

Another key strategy is to improve production efficiency. This involves

optimising production processes, reducing waste, and improving resource utilisation. By improving production efficiency, the industry can reduce its cost of production and increase profitability. One way to achieve this is through the use of automation and digital technologies, which can help to optimise production processes and reduce waste.

Collaboration is also essential in addressing the challenges facing the poultry industry. Industry stakeholders,

including producers, processors, retailers, and consumers, must work together to promote economic sustainability. This involves sharing knowledge, expertise, and best practices to improve the industry's overall efficiency and profitability.

The poultry industry must also focus on sustainability in its operations. This means adopting sustainable production practices that minimise the industry's environmental impact. One way to achieve this is through the use of

renewable energy sources, such as solar or wind power, to power production facilities. By reducing reliance on fossil fuels, the industry can reduce its carbon footprint and contribute to a more sustainable future.

The industry must also prioritise animal welfare. Consumers are increasingly concerned about the welfare of animals, and the poultry industry must address these concerns to maintain consumer trust and ensure long-term economic sustainability. This involves providing birds with adequate space, ventilation, and access to clean water and food. It also involves implementing responsible animal husbandry practices that promote the health and well-being of birds.

In addition to these strategies, the poultry industry must also focus on diversifying its product offerings. This involves developing new and innovative products that meet the changing needs of consumers. For example, the industry can develop new value-added products, such as pre-cooked and marinated chicken, to cater to consumers' convenience needs.

One strategy that the poultry industry can adopt is to embrace new technologies that can help reduce costs and increase efficiency. For example, precision farming techniques can be used to monitor and optimise bird health, feed consumption, and other factors that can impact production efficiency. Similarly, automation and robotics can be used to streamline production processes, reduce waste, and increase productivity.

The industry can also explore new business models that can help it stay competitive in a rapidly changing market. For example, vertical integration, where producers, processors, and retailers work together to provide a complete supply chain solution, can help reduce costs, increase efficiency, and improve product quality. Similarly, partnerships with suppliers and customers can help the industry better understand changing consumer needs and preferences, leading to the development of new and innovative products.

Another critical aspect of ensuring economic sustainability is to focus on developing new markets and expanding existing ones. The poultry industry can explore opportunities in emerging markets where demand for protein is growing rapidly. For example, in countries such as China and India, the demand for poultry products is expected to grow significantly in the coming years. By focusing on these markets, the industry can tap into new sources of revenue and diversify its customer base.

Finally, the industry must also focus on promoting its products and building consumer trust. This involves communicating the industry's commitment to animal welfare, sustainability, and quality to consumers. It also involves investing in marketing and advertising campaigns that can help raise awareness about the benefits of consuming poultry products.

In conclusion, the economic sustainability of the poultry industry is essential for ensuring food security and meeting the growing demand for protein. While the industry faces significant challenges, it can adopt a range of strategies to address these challenges and maintain profitability. These include adopting new technologies, improving production efficiency, collaborating with stakeholders, embracing sustainability, and diversifying product offerings. By doing so, the industry can continue to play a critical role in the global food supply chain and contribute to a more sustainable future.

Secondly, disease outbreaks are a major concern for the poultry industry. To mitigate their spread, the industry needs to implement strict biosecurity measures, conduct regular disease screenings and testing, and invest in

research and development to develop vaccines and other preventive measures. Collaboration with other stakeholders, including farmers, veterinarians, and government agencies, is also essential in developing and implementing effective disease control programs.

Thirdly, the industry is facing a challenge of antibiotic resistance. To address this challenge, the industry needs to reduce the use of antibiotics in poultry production by adopting alternative strategies, such as probiotics, prebiotics, and immune-stimulants. Effective antibiotic stewardship programs, collaboration with stakeholders, including veterinarians and government agencies, is also critical in promoting responsible use of antibiotics.

Finally, quality control and food safety are essential for the poultry industry. The industry needs to adhere to strict quality control and food safety standards and regulations. Regular audits and inspections to ensure compliance with these standards, implementation of hazard analysis and critical control point (HACCP) systems to identify and prevent potential food safety hazards, and collaboration with stakeholders, including food safety regulators, are all critical in promoting best practices and continuous improvement in food safety.

Addressing the challenges facing the poultry industry requires a collaborative effort between stakeholders, including farmers, veterinarians, government agencies, and consumers. By adopting sustainable practices, investing in research and development, and adhering to strict quality control and food safety standards, the industry can maintain its position as a significant player in the global food supply chain.





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# Overdrive's Mohit Mittal Discusses the Importance of Efficient Poultry Lighting



In today's interview, we will be speaking with Mohit Mittal, the founder of Overdrive, a successful lighting company that has made a name for itself in the poultry industry. With over 30 years of experience in the lighting industry, Mohit has valuable insights to share about the importance of efficient lighting for poultry houses.

Throughout his career, Mohit has remained focused on developing high-quality lighting solutions that are tailored to the specific needs of poultry farmers. He has worked closely with leading poultry Science universities in USA to study and design lighting systems that can benefit the health and well-being of poultry while also improving egg production and bird growth rates.

In this interview, Mohit will discuss his journey from starting his own company to becoming an expert in the poultry lighting industry. He will also share valuable advice for farmers who are looking to optimise their poultry production with efficient lighting solutions. Let's jump right in and hear what Mohit has to say.

## **Can you tell us about your journey of founding Overdrive and how it all started?**

From the beginning, I knew I wanted to start a self-owned business. After working at Phoenix Lamps(Halonix brand), I grew my experience in automobile lighting and general lighting for 15 years. In 2005, I decided to venture on my own. I started several businesses, such as job portals and a Chinese education website. Along with these, we started lighting and ventured into solar lighting as well, selling into silicon and solar cell plants.

## **How did your lighting venture become successful?**

My background in lighting and failed businesses helped me to realise that lighting systems are the future. Hence, I focused more on lighting specifically for North American markets and now for Indian markets. Initially, we began by sourcing product from different factories overseas. However, in 2011, we started manufacturing LED Lights in India for the US market. This was

only possible through perseverance and patience; and help from some amazing people at Overdrive.

## **That's impressive. Can you tell us more about the lighting solutions you provide for the poultry industry?**

Absolutely. Proper lighting is crucial for the health and well-being of poultry, and it can significantly reduce feed Consumption, Reduce Mortality rates and improve bird growth rates. Our collaborations with some leading poultry Science universities in USA, we have developed and tested efficient programmable and dimmable lighting management systems that benefit the poultry and the farmers. With our MOSFET Dimmers and Agrolume lights, farmers can efficiently automatically change/manage light intensity, colour, distribution of light and day length in their poultry houses without manual intervention.

## **Can you elaborate on those key factors for us?**

Sure. Through lighting, suitable biorhythms can be obtained. Photo-period in environmentally controlled broilers will have good impact on the regulation of water and feed consumption, on hormonal production, as well as on the distribution of animals in the EC House and on the homogeneity of the batches. Light intensity should be appropriate for the age and breed of the birds, providing enough illumination without causing stress. The colour temperature of lighting can affect the behaviour and performance of poultry, and we recommend using light sources with a colour temperature of 5000K (Natural Day Light spectrum) for optimal performance. Overdrive help design the lighting layout based on customer requirements. Finally, we advise farmers to consider Programmable, dimmable, and energy-efficient lighting solutions that helps to save costs of production by offering lower feed consumption and improving bird growth rates.

## **Could you tell us about the importance of proper lighting in different settings such as residential, commercial, or factory conditions, and how Overdrive is educating people on this topic?**

Lighting has biological and physical effects that can impact the health and wellbeing of humans. Good lighting design can help stabilise your circadian rhythm, helping improve your overall mood and assist in a better night's sleep. Contributing to your overall wellbeing. Poor lighting at work can lead to eye-strain, fatigue, headaches, stress and accidents. On the other hand, too much light can also cause safety and health problems such as "glare" headaches and stress. Both can lead to mistakes at work, poor quality and low productivity. Sudden Lighting On and Off also causes server disturbances to birds and they get a heart attack. This sudden lighting On/Off increases the mortality rates. The lighting should be turned on or Off slowly which is possible through dimmer fade program.



*Lighting plays an important role in the growth of broilers*

Overdrive continues to educate people about importance of correct and adequate lighting systems by participating in trade shows. Overdrive has exhibited at the Atlanta Poultry Show in the United States and India Poultry Expo in past few years. The show offers a platform for academic and industry experts to showcase research findings, including those related to lighting experiments. The research conducted at the poultry centers of research is well-received by the audience, as it provides valuable insights on factors such as productivity, feed conversion, and mortality rates.

In addition to trade shows, our company also values peer-to-peer learning as an essential component of our marketing strategy. For example, we recently supplied a lighting system to a company in Bangalore, where experiments were conducted to determine its effectiveness in improving poultry production. Through word-of-mouth marketing, if one farmer is able to see the benefits of using our lighting system, such as reduced mortality rates and increased feed conversion, they are likely to share their positive experience with other farmers.

It is unfortunate that India currently lacks a dedicated poultry research center focused on lighting. Lighting has the most significant impact on the cost of production for Poultry using Environmentally Controlled Houses but this is ignored. Proper

Lighting system can provide a ROI of less than 6 months to farmers. However, we believe that our commitment to education and peer-to-peer learning can help to fill this gap and provide valuable insights to farmers in the industry.

**That's great advice. Can you tell us more about your company's focus and expansion?**

Over the last 15 years, we've remained focused on providing high-quality lighting solutions for the poultry industry in the US. Recently, we have also expanded our business to include manufacturing and exporting for both domestic and international markets. In India, we've branched out into the general lighting business (OEM), catering to the residential lighting needs of the country. In addition, we have begun to market our specialty poultry lighting solutions in India as well. We hope to grow significantly in poultry industry.

**That's impressive growth. What do you think has been the key to your success in the industry?**

I believe it's a combination of innovation, hard work, perseverance, and a focus on quality. We're committed to providing the best possible solutions for our customers, and we work closely with experts in the field to ensure we're offering the most efficient and effective products.



# Comedy is No Joke #1

“ I invite readers to send a humorous paragraph like the above one.

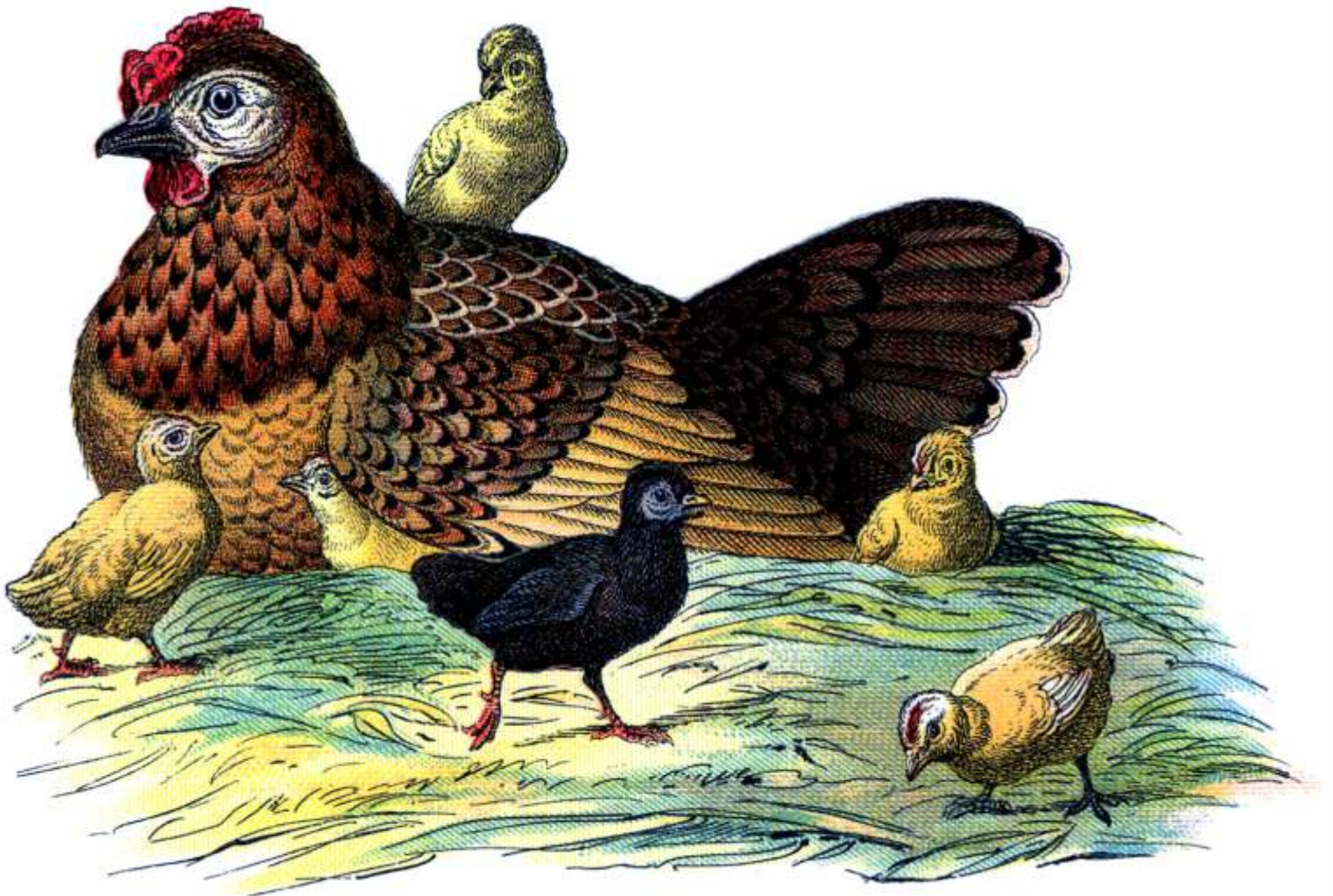
Best ones will be featured in the upcoming issue and will receive consolation prizes.

Is there any other bird that's been roasted, grilled, fried, and sautéed more times than this feathered friend? It's no wonder they're always crossing the road - they're probably just trying to avoid ending up on someone's plate! But despite all the culinary attention they receive, chickens still manage to maintain their bird-brained reputation.

” Let's face it, chickens are basically the clowns of the animal kingdom. With their waddling walk and their tendency to squawk at anything that moves, it's hard not to laugh at these goofy birds. And don't even get me started on their feathered

coats - have you ever seen a more ridiculous-looking animal? They're like the fashion victims of the avian world.

But despite their reputation for being a little bit dim, chickens are surprisingly clever creatures. They have their own social hierarchies, can recognize faces, and even have their own unique vocalisations for different situations. Who knows, maybe one day we'll even be taking orders from our chicken overlords. But until then, let's just enjoy their deliciousness and their comedic value. After all, everyone loves a good chicken joke, even if it's a little bit fowl.





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# The Fowl-tastic Vaccination Adventure of Professor Poultry and Mr. Common

Mr. Common is a novice when it comes to poultry farming. On the other hand, we have Professor Poultry, an expert in the industry who is always willing to share his knowledge with anyone who shows an interest. Together, these two characters engage in a hilarious conversation that sheds light on the poultry industry. So, come along on this witty and informative journey as we learn from the hilarious banter between Mr. Common and Professor Poultry.

**Mr. Common:** Good afternoon, Professor. I have been hearing a lot about vaccinations and immunisation in the poultry industry lately. Could you explain what they are?

**Professor:** Good afternoon. Yes, of course. Vaccination is a process of introducing a vaccine into a bird's body to stimulate an immune response and provide immunity against a specific disease. Immunisation, on the other hand, refers to the process of creating an immune response to a specific antigen, whether through vaccination or natural exposure to the antigen.

**Mr. Common:** Oh, I see. So, why are vaccinations so important in the poultry industry?

**Professor:** Well, vaccinations are important because they help prevent the spread of diseases that can be harmful to poultry flocks. This can help reduce the risk of losses and maintain the productivity of the flock.

**Mr. Common:** That makes sense. What kinds of vaccines are used in the poultry industry?

**Professor:** There are different types of vaccines used in the poultry industry, such as live attenuated, inactivated, subunit or recombinant, and vector vaccines. The choice of vaccine depends on the type of disease and the needs of the flock.

**Mr. Common:** Can you explain what each of those types of vaccines is?

**Professor:** Sure. Live attenuated vaccines contain a weakened form of the virus or bacterium that causes the disease. Inactivated vaccines contain the virus or bacterium that has been inactivated. Subunit or recombinant vaccines contain only specific proteins or parts of the virus or bacterium, and vector vaccines use another virus or bacterium to deliver the antigen.

**Mr. Common:** Thanks for explaining that. So, how do you decide which vaccine to use?

**Professor:** There are several factors to consider, such as the type of production system, the age of the birds, the disease prevalence in the area, and the cost of the vaccine. A vaccination program should be designed to meet the specific needs of each poultry operation.

**Mr. Common:** I see. Are there any other strategies used to prevent diseases in poultry flocks?

**Professor:** Yes, in addition to vaccinations, biosecurity measures are also important. These measures include strict control of visitors and equipment, the use of disinfectants, and the implementation of strict hygiene protocols.

**Mr. Common:** That's very helpful, Professor. Thanks for taking the time to explain it all to me.

**Professor:** You're welcome. It's important to understand the role that vaccinations and immunisation play in the poultry industry, and I'm always happy to share my knowledge with others.

**Mr. Common:** Hey, Professor, I have one more question.

**Professor Poultry:** Sure, what is it?

**Mr. Common:** Can chickens get vaccinated against being delicious?

**Professor Poultry (chuckles):** Unfortunately not, Mr. Common. But they are vaccinated against several diseases to ensure their health and well-being.

**Mr. Common:** (embarrassed) Oh, right. Thanks again, Professor!

**Professor Poultry:** No problem, Mr. Common. Anytime!

## Fun Fact



Some chicken breeds can lay eggs with double yolks. This is a genetic anomaly that occurs when a hen releases two yolks into the same shell, rather than the usual single yolk. Double-yolked eggs are more commonly found in young hens that have just started laying, as their reproductive systems are still developing. While double-yolked eggs are often considered a novelty, they can also pose challenges for egg producers, as they are difficult to sort and can cause problems with packaging and grading.



# Carus Laboratories signs MOU with GADVASU to Promote Veterinary Education



Carus Laboratories, a fast-growing animal healthcare company based in Karnal (Haryana) and Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), a premier academic institution in the field of veterinary and animal sciences, located in Ludhiana, Punjab signed a Memorandum of Understanding (MOU) on 21.02.2023, aimed at promoting veterinary education and recognizing the achievements of meritorious students.

**The MOU signing took place in the presence of Dr.S.S. Gill (Director of Research), Dr Swaran Singh Randhawa (Director of clinics) of the College of Veterinary Science, and Dr Rajan Sharma (Product Manager) &Mr Amit Sharma of Carus Laboratories.**

As part of the MOU, Carus Laboratories has pledged to allocate scholarships/awards to the students of the final year of BVSc and AH on the basis of their composite merit (OGPA) in the veterinary clinical subjects, namely medicine, surgery, gynaecology, and clinics.

The scholarships/awards will be presented to three meritorious students in the oath-taking ceremony of passing-out students. The aim of the MOU is to recognize the hard work and dedication of the students and to motivate them to pursue further studies in veterinary science. This year also, Carus Laboratories recognized meritorious students of GADVASU by distributing cheques to support their internship programme.

The collaboration between Carus Laboratories and GADVASU is expected to strengthen the ties between the two organizations and lead to further initiatives aimed at promoting veterinary education and research. The scholarships/awards will serve as a recognition of the academic and professional achievements of the students and will motivate them to continue their pursuit of excellence.



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## Poultry industry to grow 8-10 pc in Fy24

The domestic poultry industry is expected to grow 8-10 per cent in 2023-24, driven by volumes and realisations following stable demand and higher penetration of processed chicken as well as value-added products, a report said on Friday.

However, earnings are expected to be volatile owing to fluctuations in the raw material prices particularly maize and limited ability of players to fully pass on cost increases, it said.

In the report, ICRA said it expects the domestic poultry industry's revenues to grow at a steady pace of 8-10 per cent in FY24 due to growth in both volumes and realisations.

In addition to stable demand, the revenues will be supported by increased penetration of processed chicken and value-added products, which are growing consistently, it added.

According to the report, maize prices have grown significantly by 32 per cent on an annual basis in the first nine months of Fy23.

This was due to the growing global demand for Indian maize following the Russia-Ukraine conflict, which has subsequently resulted in an increase in the average feed price.

Earlier, the rising soybean prices had been putting pressure on feed costs, which have moderated in the current fiscal, the report said.

ICRA said it expects poultry companies to invest towards forward integration in the medium-term, that is, towards setting up processing plants to enable shift towards higher margin value-added products.

The recent widespread global bird flu outbreaks are a reason for alarm and remain a significant vulnerability for the Indian chicken business, it said.

Although there are now only a few

isolated instances in India, the report said the demand could be negatively impacted in the event of a widespread outbreak, leading to substantially lower realisations.

## As US mulls vaccinating poultry for bird flu, chicken industry could stand in the way



▲▲▲ **The Biden administration plans to test a vaccine for bird flu and is mulling whether to mass inoculate commercial poultry flocks.**

Since last year, the current outbreak of highly pathogenic avian influenza (HPAI) has resulted in the killing of nearly 60 million farmed chickens and turkeys, and many epidemiologists and food industry figures believe vaccinating the birds could be the only way to quell the crisis.

Federal policymakers will play a critical role in that inoculation decision.

The Biden administration plans to test a vaccine for bird flu and is mulling whether to mass inoculate commercial poultry flocks, the New York Times reported this week.

A number of vaccines against different strains of bird flu have been developed and tested on flocks in recent years. Vaccinating birds was mandated in China in 2017, according to health organization Gavi, the Vaccine Alliance. These vaccines have shown strong efficacy, said Rodrigo Gallardo, a poultry medicine professor at University of California, Davis.

"In terms of the feasibility of

vaccination and how to do it, that's already proven," Gallardo said. "It's more of a political problem."

But the broiler chicken industry could be the main group standing in the way of the industry embracing immunization.

The HPAI vaccines have not been used on a large scale in the U.S. because of the ramifications the inoculations would have on international trade of chicken products, said Maurice Pitesky, a poultry health and food safety epidemiology professor at UC Davis.

"Vaccination, as we all know from COVID, protects against the disease but doesn't protect per se against infection," Pitesky said. "The worry is that the product could spread HPAI around the world."

Almost 20% of the chicken industry's profits come from selling their products overseas where there are much stricter regulations on HPAI, the epidemiology professor said, much higher than turkey and egg producers.

The severity of the current outbreak — and fears of it mutating and jumping to humans — could lead to poultry product market decisions to take a backseat. But vaccinating billions of poultry birds, and roughly 300 million egg-laying hens, could prove to be a near impossible task.

"We have to figure out how to thread that needle and think about how much vaccine we can feasibly produce," Pitesky said.

## NI Agriculture: Poultry numbers on farms fall according to latest census



The number of poultry on Northern Ireland farms decreased by 16% in 2022, according to the agricultural census.

The Department of Agriculture, Environment and Rural Affairs (DAERA) said economic and animal health factors were behind the change.

The number of cattle remained almost steady, while pigs and sheep increased by just over 3%.

The figures show the overall area farmed in Northern Ireland has risen to just over 1m hectares.

That figure does not include common land - land over which other people have certain rights, usually grazing or collecting wood for fuel.

The survey data was collected on 1 June 2022, with 17,223 questionnaires completed.

On that day, 20.6 million poultry were recorded, compared to 24.5 million in June 2021.

The number of laying birds increased

by 6%, after a fall last year.

But broilers, or birds destined for human consumption, decreased by 25%.

A DAERA spokesperson said that figure was largely the cause of the fall in overall poultry numbers.

"It is important to note that figures in the agricultural census report measure the number of birds on farms on a specific date," they continued.

"Over the course of the year poultry numbers on farms may vary.

"Avian influenza has been signalled as having had a disruptive impact on poultry production in 2022.

"Other factors include well-documented cost increases for inputs such as energy and feed."

The total area of crops grown in Northern Ireland was 48,139 hectares, an increase of 4% from 2021.

Cereals increased by 7%, wheat by 12% and oats by 5%.

Winter and spring barley increased by

8% and 4% respectively.

Poultry generally need a lot of heat and feed, and with the massive increases in those costs over the last year it is hardly surprising that numbers are lower.

But this is just a snapshot of a single day - almost six million birds are still processed for consumption every week in Northern Ireland. And the increase in laying birds after the decrease last year shows this is still an attractive industry.

The bigger question is, where are the livestock reductions that the climate change committee said will be needed to meet our legally-binding climate targets?

With methane-producing ruminants like cows and sheep on the rise, however slowly, some environmentalists will ask if our highest-emitting sector is taking its fair share of the fight against climate change, or just trying to maintain business as usual.

Farmers will point to the steps agriculture is taking to reduce environmental impact by improving efficiency - reducing the amount of fertiliser needed by testing soils, developing better and faster-growing animals that can go to slaughter more quickly, and changing traditional practices, like how slurry is spread and used.

With these results coming in the same week as the committee's Northern Ireland update, it is a something of a reminder of the difficult balance to be struck between saving the world and feeding it.

## Russia sees a solid rise in egg production and exports

In 2022, Russian egg producers exported 570 million eggs, which is a 12.6% increase from 2021, Vladimir Fisinin, president of the Russian Union of poultry producers, Rosptitsesoyuz, said during an industry conference in Moscow.

During the past decade, Russia has

nearly doubled egg exports – a trend that is expected to continue. By 2030, it should reach 850 million, Fisinin forecasted, adding that Russia exported eggs to 17 countries last year.

He didn't provide further details, but in the previous years, Russia exported most eggs to Mongolia and the countries of the post-Soviet bloc: Kazakhstan and Kirgizia and the unrecognised republic of Abkhazia. Relatively small batches landed in the Middle East, primarily the UAE.

The growth in exports in 2022 was achieved thanks to a steady rise in domestic production, which jumped by 1.2 billion to 46.1 billion units. Russian egg production has been consistently rising for several years, but in 2022 this trend picked up the pace. As a result, Russia has become almost entirely self-sufficient in food eggs.

In 2022, Russia imported 750 million eggs, Fisinin said, adding that this figure is not expected to change through 2030. He estimated that 90%

of imports come from Belarus and 10% from Kazakhstan.

Konstantin Korneev, executive director of Russian consultancy Rincon Management, told the Russian magazine *Agroinvestor* that the Russian egg market was balanced in terms of supply and demand. He noted that eggs are cheap, so their share in the consumer basket does not change. The main factor influencing the industry's profitability, he said, was the regulation of grain exports, which impacted feed production costs.

However, trade dynamics within the Eurasia Economic Union – the Russia-led block including Belarus, Kazakhstan, Armenia and Kyrgyzstan – remain complicated. Local news outlet, RTVI, reported that one of the largest Belarussian egg manufacturers Firm ABS suspended sales to Russian customers in January, justifying this step with a need to meet the demand of customers on the domestic market first.

In October 2022, the Belarussian government banned the export of poultry meat and eggs to Russia for 7 companies, including the largest exporters, Servolux and Minsk poultry farm. With this step, the authorities reportedly aimed to battle food inflation.

Belarus used to export between 120,000 and 140,000 tonnes of poultry meat to the Russian market per year, and the restrictions could have cost poultry farms 30,000 tonnes of export supplies last year, local press reported.

However, it is believed that the restrictions were eased closer to the end of 2022, though no public announcements about this step have been made. It is unclear whether Firm ABS was ordered by Belarussian authorities to suspend sales to Russian customers and whether any other egg manufacturers also ceased exporting eggs to Russia.

## Action needed to prevent empty poultry shelves



▲ Shelves that held meat products were partially empty at a grocery store. OLIVIER DOULIERY / AFP GETTY IMAGES

Rising costs of energy, feed, labour, fuel, water, transport, packaging and red tape, along with the ongoing avian influenza crisis, means the production

of British poultry meat is shrinking, and access to food risks is becoming one of the greatest challenges facing the UK. Collaboration between the government



and industry should set a precedent where healthy and profitable domestic production is necessary for food security. Without a fair market price that prioritises the value of supply for producers and consumers, it is only a matter of time before British poultry sees empty shelves during the ongoing cost of living crisis.

That was the stark message from Richard Griffiths, British Poultry Council chief executive, who said it was the government's responsibility to ensure the right mechanisms are in place to support business viability and to show leadership in its own buying practices so that safe, affordable and nutritious British poultry eat remains widely available and accessible.

Griffiths said the UK should promote British food and the quality it represents in areas like care homes, schools and hospitals with a view to investing in public procurement as a driver for a food system based on fair returns.

"Unfortunately, price trumps supply and instead of setting a good example for the broader marketplace, we have a bad example that is driving British food producers out of business," he said.

- Calling for a level playing field, Griffiths said he wanted to see:
- Consistent production standards that were competitive on the global stage.
- An equitable approach to import controls for UK-EU trade.
- UK sustainability targets that prioritised food production.
- Government buying food to the standards/specifications it sets.
- A fair price paid for food that allows producers to cover costs, invest and grow.

Griffiths added that the operating environment was growing more hostile: "We need measures that prioritise supply, support producers, feed the nation and ensure the marketplace respects the true cost of food. Otherwise, it is only a matter of time before we see British poultry meat producers undercut by cheaper imports, shrinking domestic production and pricing consumers out of British

food and the quality it represents at a time it matters most." The resilience theme has also been stressed by the National Farmers' Union's poultry board. Introducing the sector's resilience plan, North Yorkshire broiler farmer and lead for net zero, Matt Donald, said producers needed to have alternatives to soya in feed.

"We need low carbon soya, and the authorisation of novel and alternative proteins and continuing to improve resource use efficiency and productivity could drop both costs and carbon out of your business. Feed usage and energy efficiency are 2 key areas to target.

"We can look to be self-sufficient or even net exporters of energy, but in order to do this, we need an easier planning process and improvements to the grid infrastructure, and this would help the uptake."

## Alternative strategies to control salmonella infection in poultry

Salmonella infection is a grave public health problem around the globe, with diarrhoea, fever and abdominal pain as its main symptoms. One of the main sources of infection for the human population is through poultry products, such as meat and eggs. It is therefore essential to apply strategies to control the presence of salmonella in the poultry production chain and to improve food safety.

Salmonella in poultry causes either subclinical disease or no change and thus enhances the likelihood of infection transmission to humans from asymptomatic poultry via the food chain.

According to the Centers for Disease Control and Prevention, salmonella causes 1.35 million infections per year in the United States. Since antibiotic use has been reconsidered due to resistance, alternative strategies based on feeding and non-feeding are recommended to control salmonella infection in poultry and to reduce

production costs.

Salmonella is a gram-negative, anaerobic and non-spore-forming bacillus that belongs to the Enterobacteriaceae family. Salmonella grows under various environmental conditions outside of a living host cell, at temperatures from 7-48°C and pH values between 6.5 and 7.5.

The salmonella genus consists of 2 species: Salmonella enterica and Salmonella bongori. Salmonella enterica includes 2,500 serovars and Salmonella bongori comprises 20 serotypes and 6 subspecies. Salmonella infection is a zoonotic disease which causes economic loss and is a public health concern around the world.

The non-antibiotic alternatives to reduce or control salmonella infections in poultry include prebiotics, probiotics, synbiotics, postbiotics and phytobiotics. These supplements are administered through the diet to increase growth performance and improve feed efficiency.

Prebiotics are fibres defined as selectively fermented dietary ingredients that bring about specific changes in both the composition and activity of the gut microbiota with a beneficial physiological effect on the host. Prebiotics, such as fructooligosaccharides, aspergillus meal and trehalose, reduce the incidence and transmission of caecal salmonella and its adverse effects on the poultry gut through modulation of gut microbiota, promotion of molecules associated with resistance to salmonella infection and increasing the accumulation of IgA cells on the intestinal mucosa.

Probiotics are live micro-organisms that can be used to prevent and treat microbial imbalance by altering gut microbiota populations. Dietary supplementation of probiotics increases the bird's ability to inhibit the growth of pathogenic bacteria, improves production performance, creates antimicrobial compounds such as hydrogen peroxide, lactic acid, bacteriocins and short-chain fatty acids to prevent infection and reduce related negative effects. Species such as Bifidobacterium, Lactobacillus, Bacillus, Enterococcus and Pediococcus are used

as probiotics for poultry.

Synbiotics are described as a combination of prebiotics and probiotics with a synergistic relationship to facilitate the implanting and survival of probiotics in poultry gut. Synbiotics alter gut microbiota composition, activate mechanisms related to salmonella inhibition, decrease the clinical signs of salmonella infection, improve production performance, enhance the immune response, prevent shedding patterns, decrease the abundance of salmonella in the caeca and reduce the intensity and frequency of histopathological injuries in poultry.

Postbiotics refers to non-viable bacteria or bacterial metabolic products, such as inactivated cells, enzymes, exopolysaccharides, plasmalogens, organic acids, short-chain fatty acids and peptides, mainly produced from lactic acid bacteria. Postbiotics improve amino acid and protein absorption, increase growth performance, stimulate beneficial gut bacteria, such as *Lactobacillus*, inhibit the adherence of pathogenic bacteria via the lectin domain, compromise pathogenic bacteria cell integrity, trigger the immune response and decrease salmonella-related infections in poultry.

Phytobiotics are plant-derived compounds, plant extracts, herbs and spices that are used to improve the health status and productivity parameters of poultry. Plants most often used as phytobiotics include alfalfa, bergamot, peppermint, black cumin, chili, clove, oregano, cinnamon and garlic.

Phytobiotics increase feed intake, stimulate endogenous enzymes, decrease pathogen proliferation, enhance nutrient absorption, increase carcass quality and muscle yield in broilers, stimulate the immune system, lower mortality, increase body weight, improve feed-gain ratios, enhance ileal villus height, width and surface area, increase mucosal thickness and muscular layer thickness, as well as improve growth performance and gut health through mitigation of the negative effects of the disease.

Bacteriophages and vaccines are viable

and technological non-feeding-based strategies implemented to reduce or control salmonella infection in poultry. Bacteriophage application for the control of salmonella infections in poultry is a safe strategy because bacteriophages are always present in the host, protecting the rest of the microbiota.

High titer of bacteriophages in single doses and bacteriophage cocktails have more potential to control salmonella infection. The efficiency of bacteriophage therapy also depends on the adaptation of the bacteria to develop resistance. The synergy between probiotics and bacteriophages enhances recovery by reducing mortality and preventing bacteria spreading.

Vaccination is one of the most efficient and cost-effective methods to reduce the impact of clinical disease, maintain herd immunity, decrease shedding, reduce transmission of salmonella in poultry flocks and provide safer food products for consumers.

Salmonella vaccines are divided into 3 categories: live-attenuated, inactivated and subunit vaccines. Live-attenuated salmonella vaccines are administered parenterally or orally, and they colonise the gut and stimulate the immune response. These vaccines can be used immediately after hatching when young poultry are immunologically immature. Inactivated vaccines are based on killed or inactivated pathogens, and are administered to breeders and layer flocks by subcutaneous injection, thereby increasing their immunity, suppressing salmonella colonisation in organs, and reducing shedding into faeces. Subunit vaccines contain 1 or more recombinant peptides/proteins or polysaccharides, and are administered either intramuscularly or subcutaneously.

Salmonella infection is one of the primary challenges for the poultry industry due to the potential risk of mortality, economic losses and public health threats. Concerns regarding antibiotic resistance has led to the design and validation of alternative strategies to prevent and control salmonella infection. However, further

research is required to understand the functional potential of antibiotic-free strategies and to promote their application to reduce and control salmonella infections.

## Sustainable feed production – where do phyto-genics fit in?

The future of animal nutrition was discussed in the last stop of the “Connecting the world” tour of German-based animal nutrition company Dr Eckel. After stops in Thailand, Indonesia and Brazil the tour wound up in November 2022, in Braunschweig, Germany, ahead of EuroTier 2022.

About 40 animal nutrition experts from all over the world gathered to hear ideas around sustainability and animal welfare in feed production. Dr Carsten Malisch kicked off the conference. From Aarhus University in Denmark, this researcher had a very interesting presentation in which he discussed several bioactive compounds, how humans have been using them for centuries and – nothing is ever straightforward – how even within types of compounds there are differences.

He introduced “plant secondary metabolites” (PSM), components in plants that are not essential for growth or survival but can nevertheless be useful. Well-known examples are caffeine and opium. In the presentation he talked mostly about tannins and discussed their effects on ruminants, which are his speciality. Tannins, he said:

- Have anthelmintic effects (dealing with nematodes);
- Have anti-inflammatory effects (the effects in monogastrics);
- Prevent bloating; and
- Reduce methane production.

All in all, at least in cattle, the substance offers more than enough to be a good alternative for antibiotic growth-promoters, he said.

He closed off with a list of plants that



have promising PSM, including chicory, jackfruit and the quebracho tree. Interestingly, he said, the quebracho tree does have high tannin content, yet the anthelmintic and anti-inflammatory effects of these tannins are limited – if any at all. That is why ongoing research is necessary.

The next speaker was Dr Bernhard Eckel, who expanded on the topic of phytogenics and how they can facilitate successful feeding of the future. One of the owners of the animal nutrition company, he painted a slightly gloomy picture of trends towards hardly any rain and an ever-growing population. Can the trend be stopped?

He said that management holds the key to all this – feeding management, farm management and also animal management. Sincere attention for those components leads to both animal welfare as well as efficiency, he argued.

He referred to the United Nations sustainability development goals for perspective, and how the company's product line could support these goals:

- No hunger (with feed optimisation, up to 4% more poultry meat can be

produced)

- Health and well-being (with feed optimisation, animals will be more resistant, antibiotic usage will be lower, and thus indirectly also human health improved)
- Sustainable production and consumption (feed optimisation saves 12.3 million tonnes of feed).

Next on stage was Anne Möddel, senior technical sales manager for Dr Eckel. As the company often emphasises the animal welfare aspect of its product range, her focus was to demonstrate that the product line AntaPhyt (based on hops and liquorice) leads to welfare effects. She mentioned:

Better air quality because of dryer litter quality, leading to less ammonia generation;

Cleaner animals, as the faeces is stable; Improved hygiene for the same reason; and

Fewer foot pad lesions.

To emphasise the economic aspects, she shared results of various trials on broiler chicks, heavy breeder hens and commercial laying hens. In the last

example, involving 50,000 broilers, she said that better health and welfare had led to more than 82,000 extra eggs.

The following 2 speakers introduced the nearby Research Institute of Feed Technology (IFF), which is also located in Braunschweig where the event was held. In a short contribution, Professor Werner Sitzmann, acting director of the institute, explained how the institute, which stems from 1961, represents many known and well-known feed companies from Germany and beyond and currently has a budget of € 1.4 million for researching the impact that machines are having on feed production. He talked about the effects that residence time, particle structure and steam addition during processing have on the feed quality. "This is where we see our USP. Everything depends on processing." His IFF colleague Patrick Sudwischer then took over to explain what he thinks makes sense if we are to sustainably feed the world. He had 5 messages for attendees to remember.

- Local protein sources can actively contribute to the reduction of greenhouse gases. He touched for instance on slaughter by-products, locally grown soybeans (Donau Soja) and plant-based protein sources, preferably those that are resistant to drought and legumes.
- Circular economies should be established.
- The best ways to reduce micro-organisms are well-chosen farm conditions.
- Insect materials, for instance, the Black Soldier Fly larvae, can only be fed fresh or processed, he explained. He shared research that wet processing actually yields lower contamination levels of Enterobacteriaceae than dry processing. In other words, the method of processing determines the hygiene status of the feed.
- Research innovation with regard to treatment processes should receive more attention.

Closing off the event was Dr Viktor Eckel – the next generation in the Eckel family. He summed up three trends that the future holds for the world of animal feed. Animal welfare is the first,

sustainability the next, and the third is innovation. Feed of the future, he said, needs a multifactorial approach.

He discussed the phases of innovation, from an impulse phase to evaluation and, eventually, technology transfer. The impulse phase could be any

development, like pressure on raw material supplies or increased demand for animal protein. In terms of evaluation, he discussed how hops are being used for food applications, as well as pharmaceutical and technological applications. The

leftovers, pomace (full of polyphenols), are also useful, as his company shows. Technological transfer, he said, then becomes visible in the company's Ecknology programme, sharing knowledge and technology.

## Turkey sector faces uncertain future after mixed Christmas



▲▲▲ **Seasonal producers in the UK are uncertain as to whether to reduce production or even stay in turkey business.**

UK turkey producers face a questionable year ahead due to bird flu, labour availability and rising costs following a mixed Christmas.

Seasonal producers are uncertain as to whether to reduce production or even stay in business. Some have been affected by avian influenza, and the required secondary cleansing and disinfection measures mean they will not be able to open their sheds to produce turkeys this year.

Others are battling the rising energy costs that are making it incredibly hard

to predict the costs of production and, on top of that, labour shortages are making it an extremely challenging time for the sector.

This follows a mixed Christmas, which saw reasonable returns for most producers, but some found sales were slow and were left with a surplus of birds at the end of the year. There is a feeling in the sector that after a very good Christmas in 2021 due to the Covid-19 lockdown and families having a more traditional Christmas, the most recent festive period had been less

heartening. This, they felt, was due to increased media coverage of avian influenza, causing consumers to buy different joints or frozen birds.

Edward Calcott, a seasonal turkey producer at Calcott Turkeys, Staffordshire, said it would be important this year to only place what you know you can sell based on the year before: "You need to keep speaking to your customers as you cannot afford to carry any spare stock because we all know a fresh turkey after Christmas Day is hardly worth anything.

We have got to demonstrate good business acumen.”

Aimee Mahony, NFU chief poultry adviser, said the government's decision to provide 2,000 visas for the seasonal poultry sector until 2024 was welcome, but there was not enough time to fully utilise them, and some had not been used because of the impact avian influenza had on some farms.

She said it would be useful to hear from producers on how they had successfully recruited or struggled to access required labour as this would help in the union's lobbying efforts and could be used in information-gathering exercises such as the ongoing independent labour review.

Michael Bailey, outgoing NFU turkey group chair, added: “If labour is a limiting factor to your business, then we need your case studies to submit to Defra. The submission can be anonymous, but we need to know the attempts you have made for recruiting people and if they have been successful or not.”

## Argentina reports avian influenza on a commercial farm

Argentina's National Service of Health and Agro-Food Quality (Senasa) has confirmed the first case of avian influenza in commercial farms in the country. This follows outbreaks of the disease among wild and backyard birds.

One case of highly pathogenic avian flu, caused by the H5N5 virus, has been identified at a broiler establishment in Mainque in the province of Río Negro, south of the Patagonian zoophytosanitary barrier, in an area with low poultry density.

In line with international protocols, Argentinean health authorities have also declared a voluntary suspension of exports of poultry products.

Senasa decided to carry out the corresponding containment measures, previewed in the Avian Influenza Contingency Manual to prevent the virus from spreading to other commercial establishments.

Authorities, professionals and technicians from Senasa are already working to recover the avian influenza-free status and the resumption of poultry exports, which accounts for just 10% of Argentinean poultry production.

“Our dialogue with the private sector is constant, as our technicians continue reinforcing biosafety measures to deal with the situation and restore the health status of our country as soon as possible,” said Juan José Bahillo, Argentina's secretary of agriculture, livestock and fishing.

From 177 notifications analysed by a laboratory, the entity has confirmed a total of 25 cases in wild birds (3), backyard poultry (21) and now the commercial sector (1). With regard to location, there are 13 in Córdoba, 4 in Buenos Aires, 2 in Río Negro, 2 in Santa Fe, 1 in Jujuy, 1 in Neuquén, 1 in San Luis and 1 in Salta. In 2021, Argentina exported 216,700 tonnes of poultry (US\$314.2 million in revenue). The country produced 2.29 million tonnes of poultry in the same year.

From that amount, 37% went to China (81,000 tonnes and US\$141 million), 12% to South Africa, 11% to Chile, 7% to Saudi Arabia, 3.7% to the UAE and 2.4% to Russia.

## Could a poultry meat import ban in Africa hurt local households?

A study conducted by the University of Bonn and published in the journal Food Security takes a closer look at the effects of European chicken exports to Ghana.

Cheap imports of chicken – mainly coming from the European Union and to a lesser extent from the USA and Brazil – have increased rapidly over the last 20 years, receiving a lot of attention in public debates about trade liberalisation, food security, and poverty. On the one hand, developing countries may benefit from cheap imports, which help to keep domestic prices low and thus improve poor people's access to nutritious foods. On

the other hand, cheap imports of chicken have long been criticised for hurting the local poultry production sector, including smallholder farmers.

“The topic is much discussed when it comes to poverty, international trade and Europe's role in the agricultural sector in Africa,” says Prof Dr Martin Qaim of the Center for Development Research at the University of Bonn.

In Ghana, chicken meat is popular, and consumption levels are rising steadily. Nevertheless, with an average annual consumption of 9 kg per capita in 2019, consumption levels remain below the worldwide average. Imports now account for 3-quarters of the total poultry meat supply in the country.

Researchers at the University of Bonn and the University of Göttingen used the example of Ghana to calculate and better understand what would happen if the African country were to significantly increase import tariffs (50%) for poultry meat, or to even stop poultry meat imports altogether.

Qaim and his team report that in their study, they used nationally representative data from about 14,000 households in all regions of Ghana. They combined this data of production and consumption with a trade model. “Such a combination of micro and macro data has not been used before to study the effects of poultry imports on different populations in West African countries,” says Qaim, adding that previous case studies focused primarily on poultry producers.

Should Ghana significantly increase its import tariffs for poultry meat, domestic prices would rise. If imports were stopped altogether, local producers would get over a third more for selling their chicken. However, the researchers note that according to insights, most households in Ghana would not benefit because prices for consumers would also increase. “And there are significantly more consumers than poultry producers,” explains lead author Isabel Knöbelsdorfer of the University of Göttingen.

On the producer side, the researchers note that another factor is that many smallholder households produce poultry primarily for their own

consumption, so they are less affected by prices.

Speaking about "poor and less poor households" in urban and rural areas, Knöbelsdorfer said: "We show that all of these groups would be worse off on average without poultry imports than with the imports. Poor households would eat 80% less chicken if imports were stopped."

Demand for poultry meat is rising sharply in many African countries and cannot be met by domestic production alone, she explained, noting that these basic findings can also be applied to other importing countries in West Africa, adding, "Our results show that international agricultural trade can have important positive development effects for West Africa."

"A reduction in meat consumption in Europe would be entirely desirable for sustainability reasons, but in Africa, the situation is different. Meat consumption is still very low in most African countries, so the cheap availability through imports improves the local supply and nutrition situation with proteins and other important nutrients," says Qaim, who is also a member of the University of Bonn's Transdisciplinary Research Area 'Sustainable Futures' and Cluster of Excellence PhenoRob.

"Of course, local agriculture in Africa also needs to be strengthened and promoted. However, striving for local self-sufficiency does not make sense for all products," Qaim says.

## South Korean Bae family aims for the best quality chicks

In its 70 years of existence as a breeder company, 3 generations have brought Sam Hwa GPS Breeding Agri., Inc. to the top of the South Korean poultry industry. With an unremitting effort to secure competitiveness, prioritising advancement rather than expansion, and with an eye for innovation, the Bae family aims for the best birds possible. Time to have a chat with the executive board.

The Korean war in the 1950s made

South Korea one of the world's poorest countries. Now, based on its gross domestic product, South Korea has the 13th largest economy. Along with such rapid economic growth, Korea's poultry industry also had to change rapidly.

Today in Korea, broiler meat is produced in modernised facilities by fully-integrated companies. Annually, 7.5 million broiler breeders are supplied in the fiercely competitive broiler market. Surprisingly, the top broiler breeder producer is not a large vertically-integrated company but Sam Hwa GPS Breeding Agri., Inc. (from now on Sam Hwa) owned by Bae's family, with 70 years of history.

By visiting this 3rd-generation family business, we learned how the Korean broiler industry has developed over the last 70 years and how Sam Hwa manages the successful operation of its businesses.

Currently, Sam Hwa is the number one broiler breeder producer in Korea, operating 11 farms and 3 hatcheries. With 300,000 breeders, they also produce 50 million broiler chicks per year. Like other businesses, they also own pig farms and organic fertiliser companies processing animal manure.

Why do integrated broiler companies want to have chicks from Sam Hwa? Because they are known for their top productivity in Korea. For example, while Ross standard chick production numbers are generally around 150 chicks per female bird, Sam Hwa has for a long time been producing more than 160 chicks. As Sam Hwa also produces the best quality chicks, many integrated companies prefer to use their birds rather than producing breeder chicks themselves.

When looking at Sam Hwa's 70 years of history, we also see the history of the Korean broiler industry. "The founder of Sam Hwa, my father, started a layer hatchery in 1952. Since there were no incubators in Korea at that time, he had to hatch eggs completely by hand, including temperature adjustment and egg turning," president Sung-Hwang Bae remembers.

In 1975, the current president changed his business from a layer hatchery into a broiler hatchery. Before 1970, chicken

meat came from finished old layers, not from broiler breeds. The 1970s was a period of full-on economic growth in Korea. With the increasing demand for chicken meat, Sam Hwa could grow its business, too. As many competitors also expanded similar businesses, in 1989, Sam Hwa was the first to introduce grandparent stock (GPS) in Korea.

Since the 1990s, the Korean broiler industry has transformed itself from one using traditional methods into a modern integrated business. Integrated companies wanted hygienic and good-quality breeders to safeguard their stable business operations. "That trend enabled Sam Hwa to expand its farms and hatcheries," said Bae. "With many developing Asian countries starting broiler businesses in the late 1990s, we began exporting our breeder chicks to 6 Asian countries, until the 2003 national HPAI outbreaks in South Korea."

When we look at the Korean broiler industry, it seems only natural that Sam Hwa has grown. However, the reason why Sam Hwa could reach the top was 70 years of unremitting effort to ensure competitiveness. Right from the beginning of their business, there has always been plenty of competitors. In Korea now there are 3 more broiler breeder producers owned by big broiler operations offering different breeds. "To maintain optimum productivity we prioritised 'advance' rather than 'expansion'," says president Bae.

Sam Hwa has no hesitation in challenging and investing in innovation. Over the last 70 years, Sam Hwa introduced many new facilities and new practices (e.g., salmonella-free production, 2-floored wide house, spin feeder, hygienic heat-treated feed, 1-way flow hatchery, etc.) for the first time in Korea.

Manager Young-Hio Ko comments: "We at Sam Hwa believe that establishing an internal decision-making process and our innovative culture has contributed much more to our success than superficial investment."

They know well that novel things that seem plausible often become added troublemakers. Before making a new investment, they always investigate and

plan carefully. "Even after introduction, there is continuous analysis and adjustment to extract and maximise the practical results," says Ko.

As separate organisations, Sam Hwa's hygienic laboratory and facility equipment department are always monitoring the current situation and provide immediate professional support for their farms and hatcheries. This type of internal operating method and culture is not something that other competitors can easily match through financial investment alone.

To maintain the best results, Sam Hwa always uses the best facilities on their production sites. In 1992 when they started raising GPS, they decided to change the production system from traditional cage to floor to improve productivity. At that time, no one in Korea had ever tried the floor system for breeders. In a situation where everything changed, including management practices and farm facilities, Sam Hwa could not find help in Korea.

To minimise the enormous potential risks involved, Sam Hwa had to select the most reliable and supportive company. Bae: "After inquiring about different types of farm equipment, for the automated feeding system we chose Roxell's products which have an excellent reputation. Based on our situation and the local conditions in Korea, Roxell and Sam Hwa installed appropriate products and then together determined the optimum operational practices."

As today's Sam Hwa shows, the move was a very successful one. Now, Sam Hwa produces the best results, far exceeding the Ross standard production potential.

"Modern farms rely heavily on automation. If someone uses unreliable equipment or fails to repair problematic equipment quickly, they will suffer huge economic losses," financial executive Ko knows. Sam Hwa uses proven Roxell products on all its farms. Because it has used that company's products for 30 years, all the farm staff are familiar with them and can handle them skilfully, no matter which Sam Hwa farm they work on.

Sam Hwa's facility equipment department has experts and a spare parts centre. When there is a problem, they promptly identify the cause and find a solution. Even if it is an unfamiliar problem, they are accustomed to getting Roxell's professional support, either remotely or by e-mail. As all the farms use the same equipment, it is easy to source and store spare parts.

Since 2018, the family business has been in the process of handing over to the 3rd generation. Successor Sang-Hyeon Bae is already heavily involved in the company: "Although I will be taking over the top breeder company, I also know that management won't be a piece of cake as my generation will be facing a lot of new challenges." She continues: "In Korea today, the livestock industry is considered not just conventional in its practices but also not eco-friendly. Recently, Sam Hwa began a project to generate green energy using methane gas from livestock waste. We are trying to remould ourselves as a company that provides eco-friendly solutions to pollution from the livestock industry."

Sam Hwa has proven that success comes from meeting a challenge to advance. Current president Bae concludes: "I have every faith that the 3rd generation will overcome future difficulties and lead the Korean broiler industry into a new era."

## RSPCA to challenge Defra over legality of fast-growing broilers



The UK's largest animal welfare charity, the RSPCA, is to intervene in support of a judicial review on intensively bred chickens. It has announced that it will contribute evidence and arguments in what it describes as a "potentially landmark" judicial review being brought by the Humane League UK at the High Court in London in May.

Its evidence will concentrate on both the welfare issues of fast-growing breeds and the lack of clarity of the current animal welfare legislation.

The case challenges the UK government on the legality of allowing the use of genetically-selected fast-growing breeds of meat chickens. The challenge is based on the RSPCA's 'Eat. Sit. Suffer. Repeat: The life of a typical meat chicken' report, which was published in 2020, and highlighted the welfare issues associated with breeds selected to grow fast.

Its research has demonstrated that faster-growing breeds are more likely to die or need to be culled due to ill health, develop sores on their legs and struggle to walk properly. They reach their average slaughter weight in 35 days, and the charity says that such rapid growth rates can contribute to other health problems, including ascites (heart failure), sudden death syndrome (heart attacks) as well as leg and foot issues.

Kate Parkes, RSPCA poultry expert, said the charity was pleased it had been granted permission to act as an

***The UK's largest animal welfare charity, the RSPCA, is to intervene in support of a judicial review on intensively bred chickens.***

intervener in the case as research clearly shows the welfare issues associated with fast-growing breeds was unacceptable.

"We have long had serious concerns about the welfare of fast-growing breeds of meat chickens. The strain of growing at such a rate to fulfil demand for cheap, readily available chicken means that by the end of their short lives, these fast-growing birds are less able to exhibit their natural behaviour such as foraging, dust bathing and perching and instead spend most of their lives sitting and eating, less able to move around."

The use of fast-growing breeds of chicken is not permitted under its RSPCA Assured Scheme – the charity's ethical label and farm assurance scheme, due to the welfare issues involved.

Many farmers agree that there are significant benefits to rearing slower-growing, higher-welfare breeds. Mark Gorton, managing director of Traditional Norfolk Poultry, said: "We have found that the slow-growing

breeds of chickens we grow are best adapted to making the most of what we provide as they seem to have an abundance of energy which allows their natural inquisitive instincts to really show, which is what we are trying to achieve. It is not unusual to see all of the perches we provide completely full of birds or to see young chickens running around outside chasing insects."

The RSPCA supports the Better Chicken Commitment campaign, which is dedicated to raising welfare standards across the chicken supply chain by 2026.

## 'No antibiotics used in poultry'

Bangladesh's poultry industry operators and farmers use prebiotics, probiotics and essential oils instead of antibiotics to help produce good quality meat and eggs, said a top leader of the poultry industry yesterday.

Prebiotics are specialised plant fibres that aid in stimulating healthy bacteria

whereas probiotics are live microorganisms that have health benefits. Essential oils are concentrated extracts from plants.

"There is firm belief among consumers that we use antibiotics, but reality is that we are using prebiotics, probiotics and essential oils. Consumers can now buy eggs and chicken meat with a guarantee from the market if they want," said Moshir Rahman, president of the Bangladesh branch of the World's Poultry Science Association (WPSA).

He made this remark on the opening day of a two-day international seminar on poultry in Dhaka, according to a press release.



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## UAE allows temporary increase in egg, poultry prices

The Ministry of Economy said that increasing prices of eggs and poultry products in the UAE comes in accordance with the provisions of Federal Law No. 15 of 2020 on consumer protection, and relevant laws and decisions that are aimed at ensuring a balanced merchant-consumer relationship and preserving food security across all marketplaces at the national level. The Ministry clarified that the price hike is temporary, and will be assessed within six months.

“Should the grounds that gave rise to the resolution cease to exist, the resolution itself would cease to exist, considering the changes in the local, regional, and global marketplaces,” added the ministry in a clarification issued today on the recent approval of increasing by a maximum of 13 percent the prices of eggs and poultry products in the UAE.

The ministry said the increase is based on a resolution it issued on March 6, adding that this step was taken following a request submitted by a number of companies operating in the sector purporting that they had incurred significant losses over the last period as a result of high production costs and production inputs from imported material, including fodder, and increasing shipping costs.

According to the Ministry, it conducted an analytical study to determine demand in collaboration with a specialised advisory team on the prices of egg and chicken products, which concluded that a justified increase could range between 13 and 20%. The study's findings were then submitted to the Supreme Committee for Consumer Protection, which recommended that the raise be approved at a maximum rate of 13%.

The Ministry made it clear that this price increase would help shield poultry and egg producers from the adverse effects of high production costs and

lessen their impact. This would ensure that the producers could continue to sell eggs and poultry products in the country's markets at stable and reasonable prices and in sufficient quantities to satisfy all consumer demands across the country without compromising supply chains and market efficiency.

## 65.82 crore project to increase poultry meat production

Comprehensive changes will be brought in the poultry sector to maximise production and end the monopoly of interstate lobbies, Minister for Animal Husbandry and Dairy Development J. Chinchurani has said.

Speaking at an event in Kollam on Saturday, she added that a 65.82-

crore project would be soon launched for establishing broiler chicken farms and meat processing plants. “At present, the poultry meat price in Kerala is decided by traders in Coimbatore, Namakkal, Palladam, and Dindigul. They increase the price as they please and this practice needs to change,” she said.

In the first phase of the project, around 1,000 poultry farms would be established in Kerala along with processing plants, units for manufacturing value-added products, broiler breeding farms, and Kudumbashree marketing centres. Speaking at the event, she added that more dairy villages would be established in the district under Ksheera Gramam project. “The department will also start a quarantine facility at Panthaplavu in Pathanapuram for the cattle coming from other States. The farmers will be offered financial assistance to feed the calves,” said the Minister.



**The UAE Ministry made it clear that the price increase of egg and poultry would help shield poultry and egg producers from the adverse effects of high production costs and lessen their impact.**

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## January 2023

- 1. India Poultry Show-2023**  
**Dates:** January 20 - 22, 2023  
**Venue:** Codissia Trade Fair Complex  
**City:** Coimbatore, Tamilnadu  
**Country:** India  
**Website:** [www.indiapoultryshow.com](http://www.indiapoultryshow.com)
- 2. The International Production & Processing Expo (IPPE) 2023**  
**Dates:** January 24 - 26, 2023  
**Venue:** Georgia World Congress Center  
**City:** Atlanta  
**Country:** USA  
**Website:** [www.ippexpo.org](http://www.ippexpo.org)

## February 2023

- 1. Dairy and Poultry Expo**  
**Dates:** February 2 - 4, 2023  
**Venue:** ICCB, Kuril Bishwa Road, Nexto 300 Ft Purbachal Express highway  
**City:** Dhaka, Bangladesh  
**Country:** India  
**Website:** [www.limraexpo.com](http://www.limraexpo.com)

## March 2023

- 1. Viv Asia 2023**  
**Dates:** March 8 - 10, 2023  
**Venue:** IMPACT  
**City:** Bangkok  
**Country:** Thailand  
**Website:** [www.vivasia.nl](http://www.vivasia.nl)

## May 2023

- 1. Middle East Poultry Asia 2023**  
**Dates:** May 1 - 3, 2023  
**Venue:** Riyadh International Convention and Exhibition Center  
**City:** Riyadh  
**Country:** Saudi Arabia  
**Website:** [www.mep-expo.com](http://www.mep-expo.com)

## 2. Fieravicola 2023

**Dates:** May 3 - 5, 2023  
**Venue:** Rimini Expo Centre  
**City:** Rimini  
**Country:** Italy  
**Website:** [www.fieravicola.com](http://www.fieravicola.com)

## 3. Viv Rusia 2023

**Dates:** May 30 - June 1, 2023  
**Venue:** Crocus Expo  
**City:** Krasnogorsk, Moscow  
**Country:** Russia  
**Website:** [www.meatindustry.ru](http://www.meatindustry.ru)

## July 2023

- 1. Livestock Philippines 2023**  
**Dates:** July 5 - 7, 2023  
**Venue:** World Trade Center Metro Manila  
**City:** Pasay City  
**Country:** Philippines  
**Website:** [www.livestockphilippines.com](http://www.livestockphilippines.com)

## August 2023

- 1. The Poultry Expo @ The Livestock Expo**  
**Dates:** August 3-5, 2023  
**Venue:** India Expo Center & Mart  
**City:** Greater Noida  
**Country:** India  
**Email:** [info@pixieexpomedia.com](mailto:info@pixieexpomedia.com)  
**Website:** [www.pixieexpomedia.com](http://www.pixieexpomedia.com)

## September 2023

- 1. Space 2023**  
**Dates:** September 13-15, 2023  
**City:** Rennes  
**Country:** France  
**Website:** [www.space.fr](http://www.space.fr)



# EGG

## Daily and Monthly

### Prices of February 2023

Name Of Zone / Day	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	Average	
<b>NECC SUGGESTED EGG PRICES</b>																														
Ahmedabad	475	480	483	483	460	462	465	465	445	445	445	435	440	442	445	445	445	445	448	450	450	435	435	435	435	435	435	435	450.29	
Ajmer	445	445	430	412	412	412	412	402	402	375	370	372	390	395	395	395	385	385	400	403	395	380	380	380	380	385	397	400	397.64	
Barwala	435	420	415	402	402	402	402	402	381	381	381	381	386	391	391	391	391	391	400	403	403	378	378	378	378	382	392	395	394.00	
Bengaluru (CC)	465	465	465	465	465	465	465	465	445	445	445	445	445	450	450	450	450	450	450	450	450	450	440	440	440	440	440	440	451.25	
Brahmapur (OD)	462	465	465	460	460	460	460	460	439	439	439	429	434	437	441	436	436	436	436	436	436	423	423	423	423	423	429	434	440.86	
Chennai (CC)	480	480	480	480	480	480	480	480	480	455	455	455	455	465	465	465	465	465	465	465	465	465	465	465	465	465	465	465	468.39	
Chittoor	473	473	473	473	473	473	473	473	473	448	448	448	448	458	458	458	458	458	458	458	458	458	458	458	458	458	458	458	461.39	
Delhi (CC)	445	454	454	435	421	421	421	421	421	400	400	395	398	405	410	410	410	410	410	421	421	421	400	400	400	400	403	415	415.07	
E.Godavari	440	445	445	445	445	445	445	445	415	415	415	415	408	411	414	409	409	409	409	409	409	400	400	400	400	400	405	410	418.46	
Hospet	425	425	425	425	425	425	425	425	405	405	405	405	405	410	410	410	410	410	410	410	410	410	400	400	400	400	400	400	411.25	
Hyderabad	423	426	426	410	412	415	415	415	390	390	380	380	383	386	389	389	389	389	392	395	395	385	385	385	370	375	380	385	394.79	
Jabalpur	453	453	453	440	430	415	415	421	421	421	410	417	420	420	420	405	405	407	407	407	407	407	407	407	407	407	412	412	418.07	
Kolkata (WB)	505	507	507	507	507	507	490	490	490	490	490	475	475	480	480	475	475	475	475	475	468	460	460	460	460	460	465	470	480.82	
Ludhiana	426	436	436	421	416	401	401	401	401	391	381	381	381	388	392	392	392	392	392	392	405	405	405	386	379	379	379	383	393	397.68
Mumbai (CC)	478	483	486	486	470	470	475	475	475	450	440	440	440	443	446	449	449	449	449	449	452	455	455	445	445	445	445	445	456.96	
Mysuru	465	465	465	465	465	465	465	465	448	448	448	448	448	453	453	453	453	453	453	453	453	442	442	442	440	442	442	442	453.11	
Namakkal	460	460	460	460	460	460	460	460	440	440	440	440	440	440	440	440	440	440	440	440	440	440	440	440	440	440	440	440	445.71	
Pune	500	500	500	500	490	480	480	480	480	465	450	450	450	455	455	455	455	455	455	455	457	459	459	454	449	449	449	449	465.32	
Raipur	455	460	460	450	450	445	445	445	435	420	415	420	420	420	425	425	415	410	410	410	410	410	405	405	405	405	407	412	424.79	
Surat	490	495	500	500	480	480	485	485	465	465	465	450	450	455	455	455	455	455	455	455	455	455	440	440	440	440	440	440	462.32	
Vijayawada	440	445	445	445	445	445	445	445	415	415	415	415	408	411	414	409	409	409	409	409	409	400	400	400	400	400	405	410	418.46	
Vizag	480	460	460	460	460	460	460	460	460	440	440	440	440	440	440	440	420	420	420	420	420	400	400	400	400	400	405	410	434.82	
W.Godavari	440	445	445	445	445	445	445	445	415	415	415	415	408	411	414	409	409	409	409	409	409	400	400	400	400	400	405	410	418.46	
Warangal	425	428	428	412	414	417	417	417	392	392	382	382	385	388	391	391	391	391	391	394	397	397	387	387	387	372	377	382	387	396.79
<b>Prevailing Prices</b>																														
Allahabad (CC)	500	500	490	480	476	467	462	452	448	443	429	429	433	443	443	443	443	443	448	448	448	443	443	438	433	433	438	443	451.39	
Bhopal	475	475	475	460	440	440	440	425	425	425	405	410	410	425	425	425	410	410	415	415	415	415	415	405	405	405	405	410	425.18	
Indore (CC)	470	470	460	440	440	440	435	425	420	420	410	410	425	425	420	420	410	410	420	420	410	405	400	400	400	420	420	420	423.75	
Kanpur (CC)	452	462	462	448	433	433	433	419	419	419	405	405	405	414	414	414	414	414	414	424	424	424	424	424	405	405	414	424	433	423.79
Luknow (CC)	513	513	500	500	490	480	480	467	467	467	457	450	433	433	433	433	433	433	450	450	450	450	450	450	450	450	450	460	470	461.14
Muzaffurpur (CC)	487	490	490	470	460	460	460	460	440	440	440	445	450	458	458	453	450	450	460	460	460	460	440	440	440	443	448	460	456.14	
Nagpur	450	460	460	460	440	440	445	440	440	415	415	415	415	415	425	425	410	410	410	410	410	420	420	410	400	400	390	390	422.14	
Patna	487	490	490	470	460	460	460	460	440	440	440	445	450	458	458	453	450	450	460	460	460	460	440	440	440	443	448	460	456.14	
Ranchi (CC)	486	500	486	486	476	476	467	467	467	452	452	452	452	457	457	457	457	457	457	457	467	457	453	453	443	443	443	443	460.93	
Varanasi (CC)	490	497	497	483	483	467	457	457	457	450	433	433	440	450	450	450	450	450	457	463	463	447	440	440	440	443	447	457	456.82	

# Editorial Calendar 2023

Publishing Month: <b>January</b> Article Deadline : <b>30<sup>th</sup>, Dec. 2022</b> Advertising Deadline : <b>3<sup>rd</sup>, Jan. 2023</b> Focus : <b>Winter Disease Management</b>	Publishing Month: <b>February</b> Article Deadline : <b>30<sup>th</sup>, Jan. 2023</b> Advertising Deadline : <b>3<sup>rd</sup>, Feb. 2023</b> Focus : <b>Health &amp; Nutrition Management</b>	Publishing Month: <b>March</b> Article Deadline : <b>28<sup>th</sup>, Feb. 2023</b> Advertising Deadline : <b>3<sup>rd</sup>, March 2023</b> Focus : <b>Vaccination &amp; Immunization</b>	Publishing Month: <b>April</b> Article Deadline : <b>30<sup>th</sup>, March 2023</b> Advertising Deadline : <b>3<sup>rd</sup>, April 2023</b> Focus : <b>Summer Management</b>
Publishing Month: <b>May</b> Article Deadline : <b>30<sup>th</sup>, April 2023</b> Advertising Deadline : <b>3<sup>rd</sup>, May 2023</b> Focus : <b>Cold Chain Management</b>	Publishing Month: <b>June</b> Article Deadline : <b>30<sup>th</sup>, May 2023</b> Advertising Deadline : <b>3<sup>rd</sup>, June 2023</b> Focus : <b>Feed Production</b>	Publishing Month: <b>July</b> Article Deadline : <b>30<sup>th</sup>, June 2023</b> Advertising Deadline : <b>3<sup>rd</sup>, July 2023</b> Focus : <b>Layer Farming</b>	Publishing Month: <b>August</b> Article Deadline : <b>30<sup>th</sup>, July 2023</b> Advertising Deadline : <b>3<sup>rd</sup>, August 2023</b> Focus : <b>Genetics &amp; Breeding</b>
Publishing Month: <b>September</b> Article Deadline : <b>30<sup>th</sup>, August 2023</b> Advertising Deadline : <b>3<sup>rd</sup>, September 2023</b> Focus : <b>Biosecurity Practices</b>	Publishing Month: <b>October</b> Article Deadline : <b>30<sup>th</sup>, September 2023</b> Advertising Deadline : <b>3<sup>rd</sup>, October 2023</b> Focus : <b>Winter Breeding Management</b>	Publishing Month: <b>November</b> Article Deadline : <b>30<sup>th</sup>, October 2023</b> Advertising Deadline : <b>3<sup>rd</sup>, November 2023</b> Focus : <b>Environment Control</b>	Publishing Month: <b>December</b> Article Deadline : <b>30<sup>th</sup>, November 2023</b> Advertising Deadline : <b>3<sup>rd</sup>, December 2023</b> Focus : <b>Industry Outlook</b>

## Subscription Rates

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