

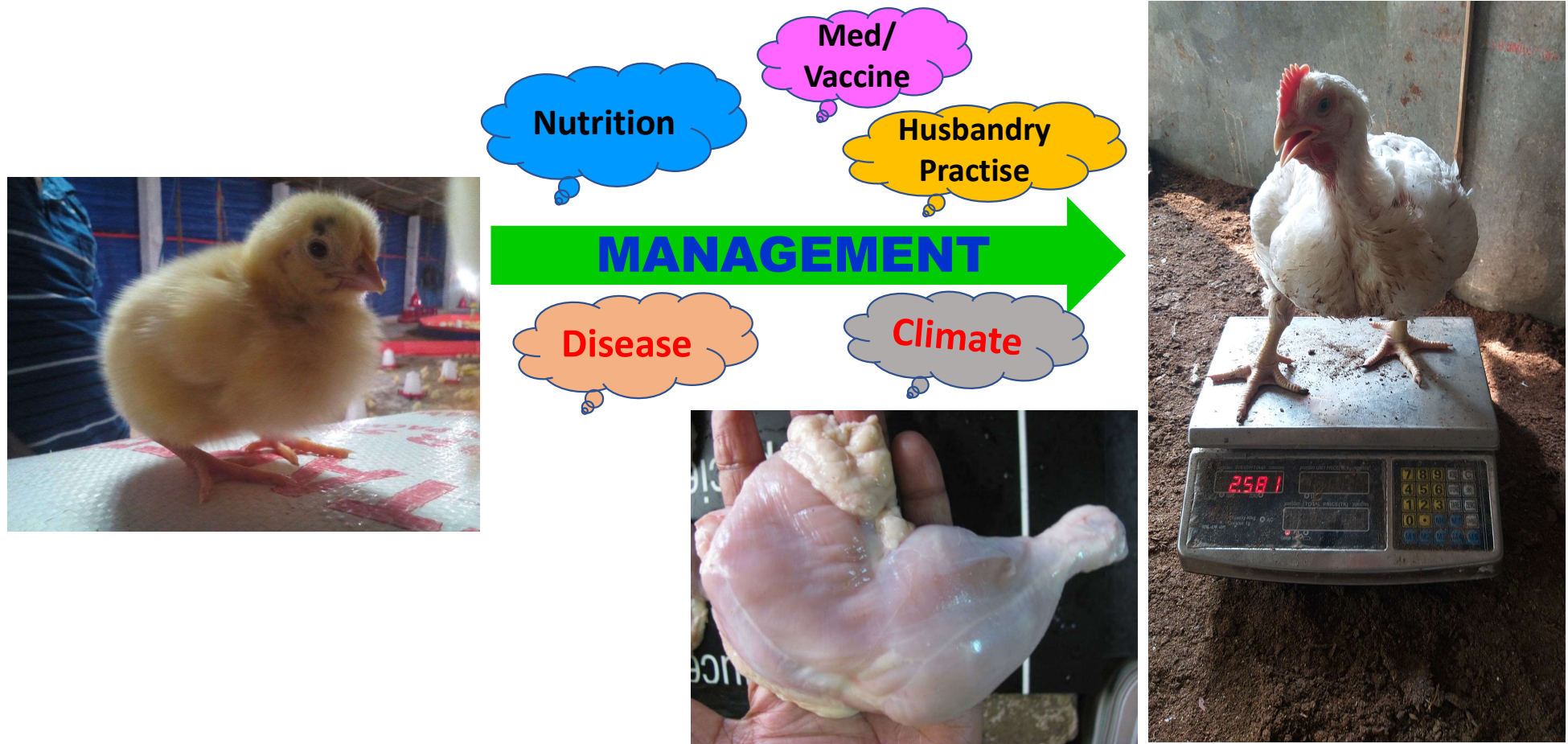
GOOD EVENING

WELCOME

TO

POULTRY FAMILY

Commercial Broiler Management



Commercial Broiler Management



Genetic Potentials of Today's Broiler

42 day

Body Wt 3.0 Kg

FCR 1.60

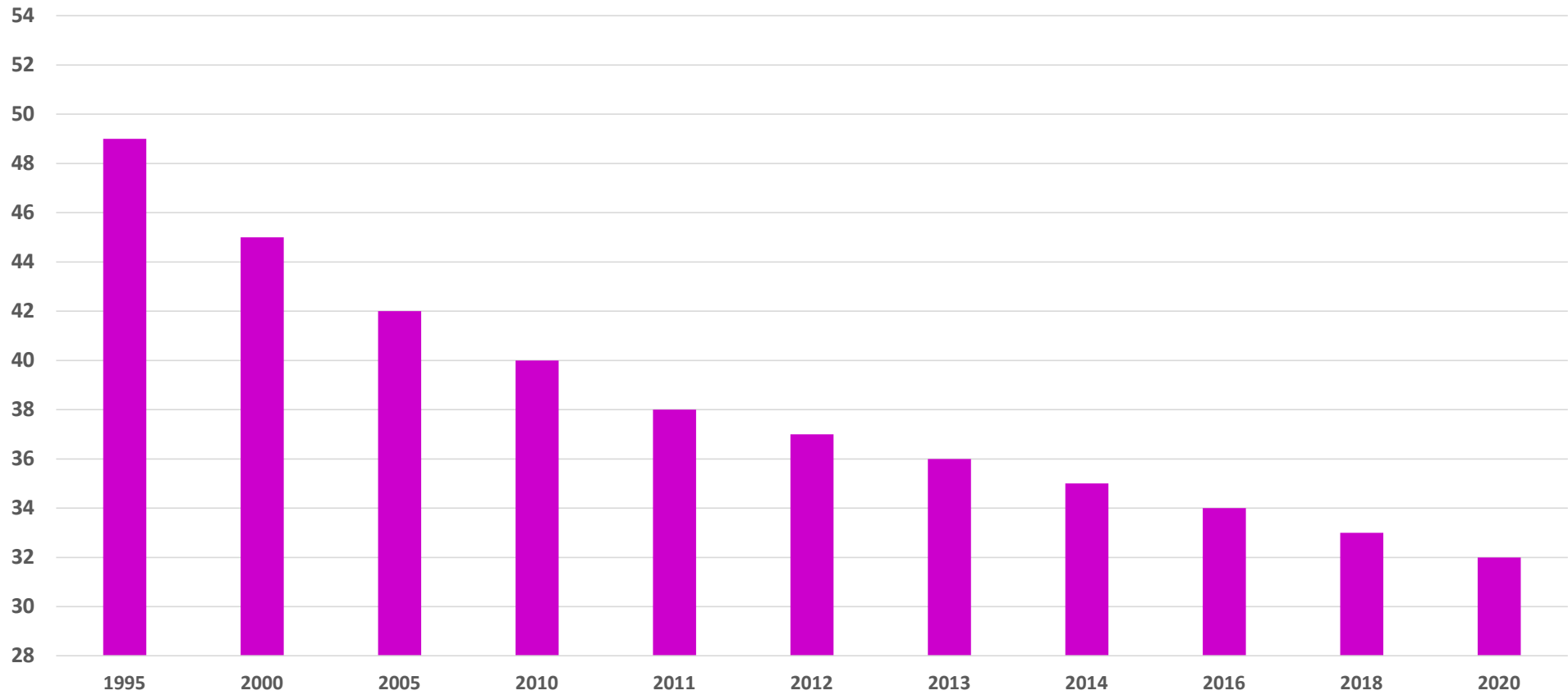
32 day

Body Wt 2.0 Kg

FCR 1.40

No of Days Required to reach 2 Kg Body Wt

DAY



Basic Need of Chicks

**DISEASE
FREE
House**

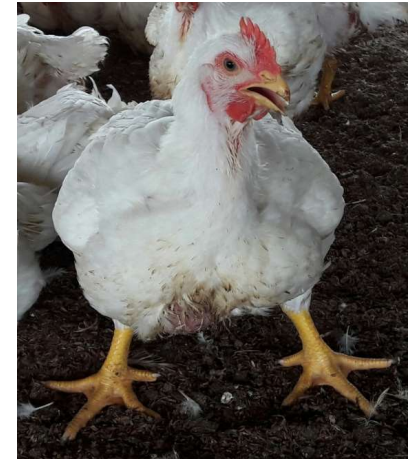
COMFORT



**Fresh
Feed**

**Fresh
Water**

Requirement of Today's Broiler Chicks



Husbandry Practice

Nutrition

- # Good FEED
- # **Feed Handling**
- # Gut Health Management

- # Infrastructure
- # **Temperature**
- # Ventilation
- # **Water Quality**
- # Day-to-day Management
- # **Welfare**

Biosecurity

- # Disease Free Environment
- # **Health Management**
- # Vaccination
- # **Immunity Improvement**

Disease Free House

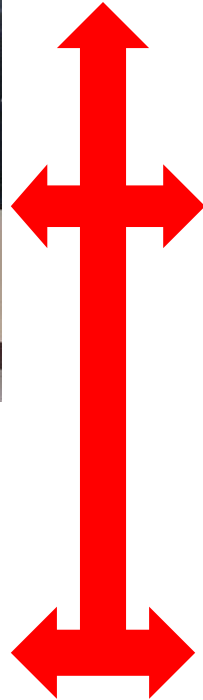
Biosecurity



**A set of protective measures
to
Prevent Entry of pathogens
in Poultry Production Area
and /or
Prevent their transfer
or
spread within / to other
Poultry Production Site**



BIOSECURITY



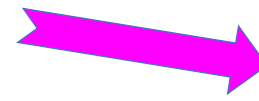
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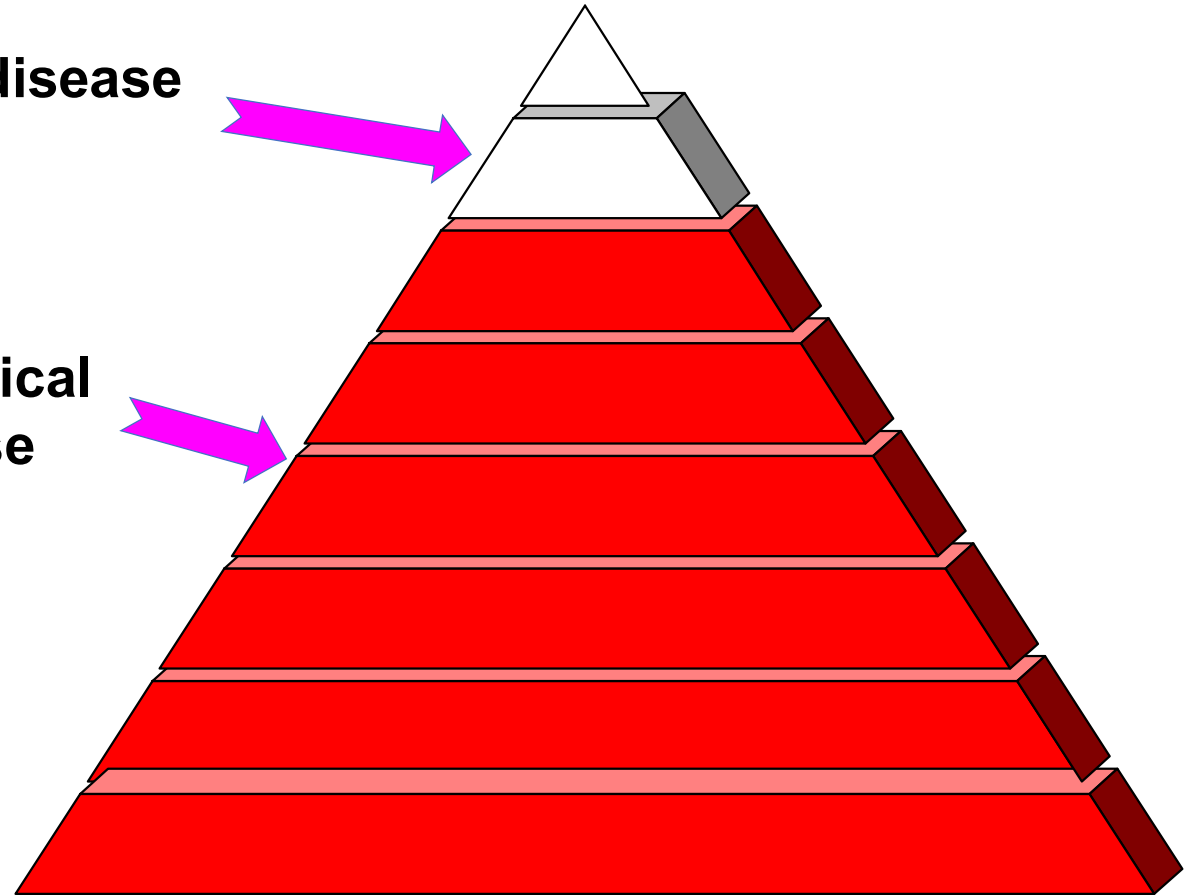
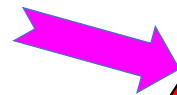
Economic Benefits of Biosecurity

**Good
Biosecurity
Measures
can
Reduce 50%
Medicine
Use**

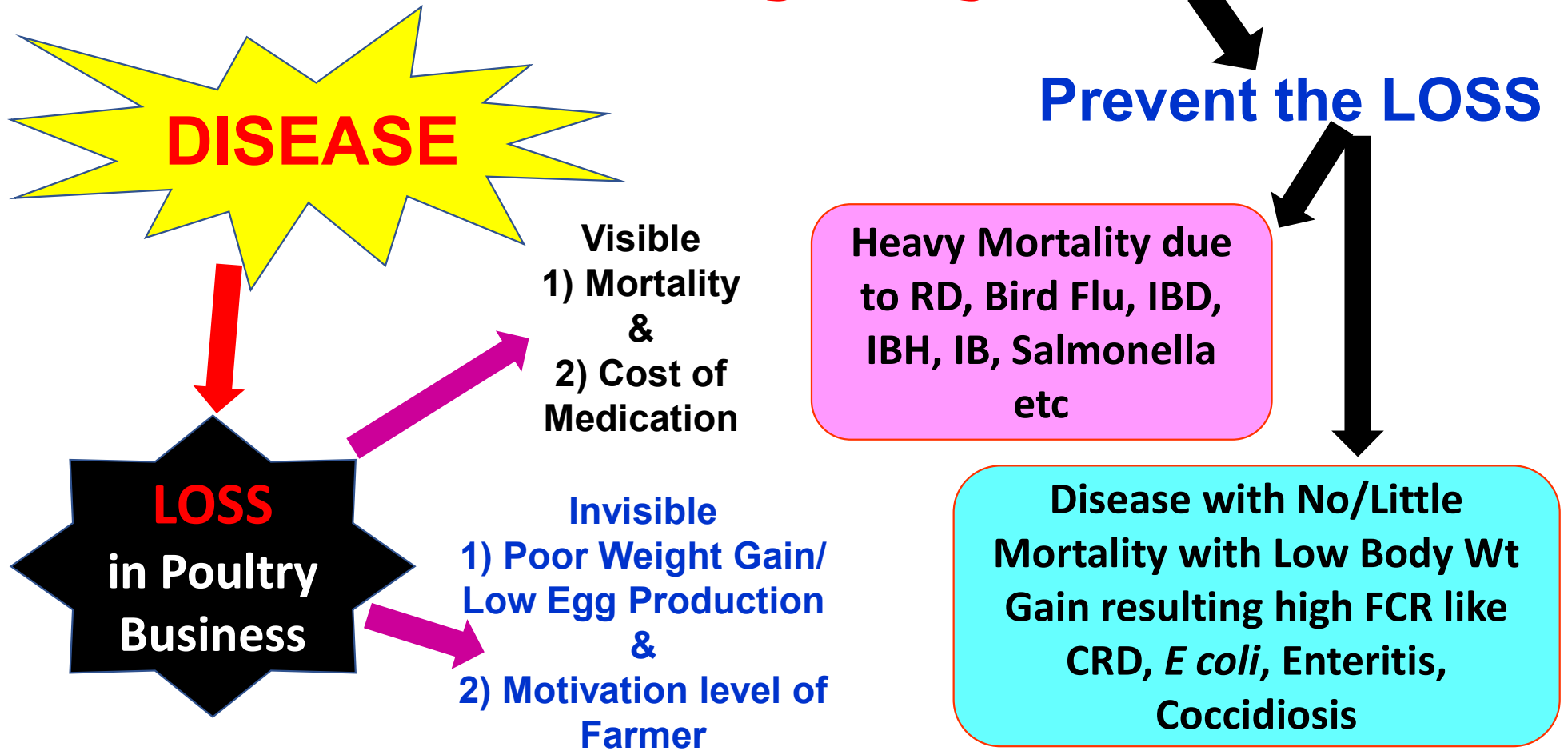
Clinical disease



**Sub-Clinical
Disease**



Biosecurity Objective



Bio-secured Farm



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Biosecurity – NOT Like these



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Biosecurity – Like these



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Biosecurity – Like these

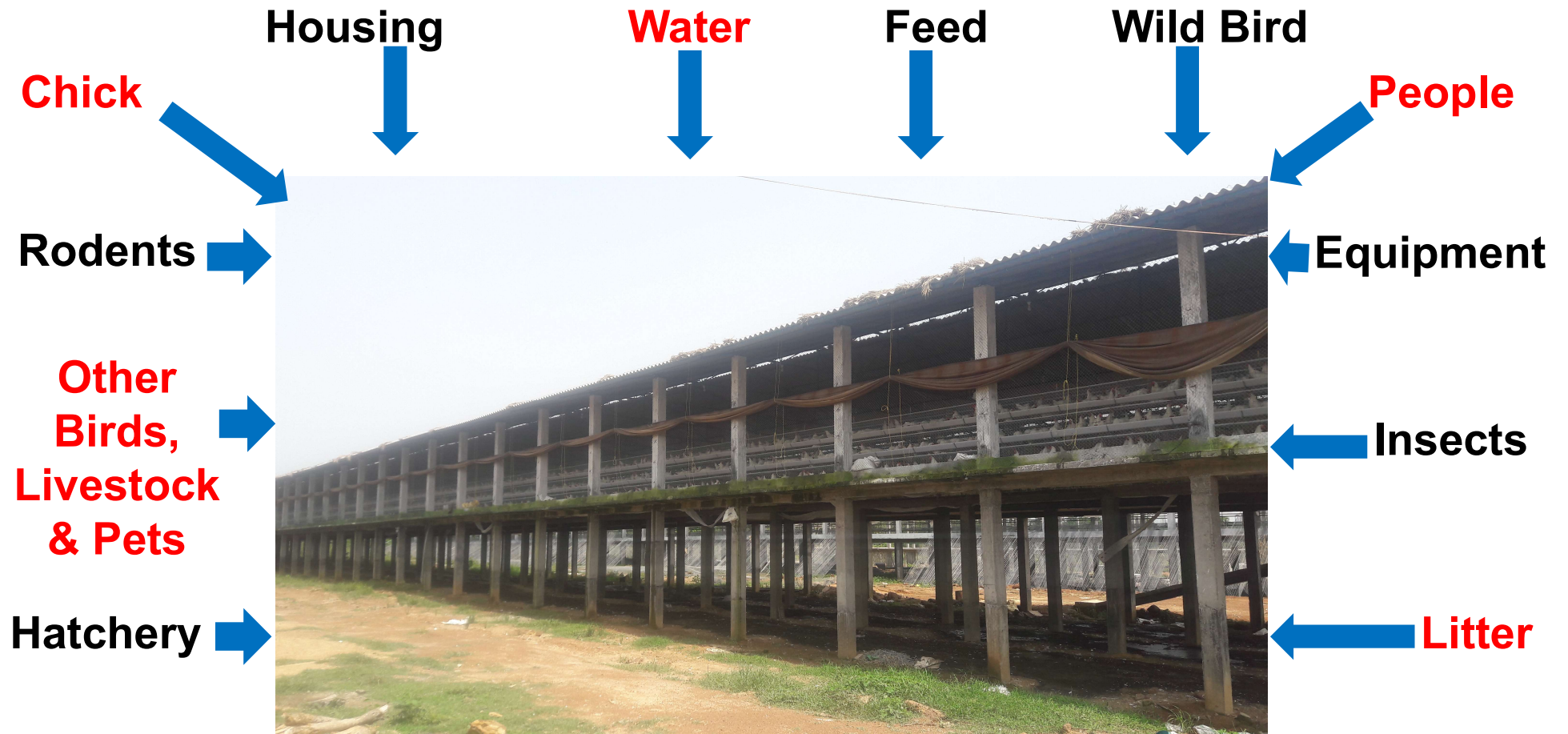


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Routes of Disease Entry



Hand of Biosecurity



COMFORT

**SPACE
& BED**

Temperature

LIGHT

**Ventilation
OR
Air Circulation**

Space & Bed (Litter) Management

Floor Space Needed for each Broiler depends on

- Targeted Live weight & Age of Harvesting
- **Season & Climate**
- Type & System of Housing and Equipment, particularly Ventilation

Under Open Farming System (No EC) having Excellent Ventilation with BOTH SIDE OPEN 1.580 Kg Broiler Meat per Sq Ft is Possible

1 st Week	0.3 – 0.4 sq ft
2 nd Week	0.5 - 0.6 sq ft
3 rd Week	0.7 – 0.8 sq ft
4 th Week onwards	1.3 – 1.5 sq ft



Space & Bed (Litter) Management

In EC Shed, Stocking Density Influences

- Broiler Performance
- **Uniformity**
- Bird Welfare
- Profitability

Quality of Housing & EC system determine the stocking density;
Casual Increase in stocking density must be complemented with Ventilation, Feeding space & Drinker availability

Targeted Body Wt	Kg Broiler/ Sq Ft
Below 2.04 Kg	2.97
2.04 – 2.49 Kg	3.44
Above 2.49 Kg	3.90



Space & Bed (Litter) Management

Poor Space Results

- Over-Crowding
- Huddling
- Dampness of litter
- Competition
- Poor Growth & High FCR
- Growth & Multiplication of Micro-organisms
- Death due to Starvation



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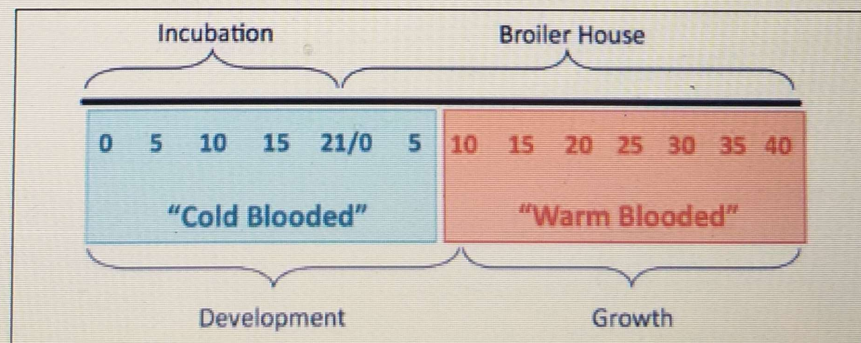
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Temperature Management

It is crucial for broiler performance to ensure a proper development of the chick (incubation + first 10 days of grow-out) especially because the chick does not have the ability to properly control its body temperature ('Cold Blooded') during this period.



Winter temperatures pose an additional challenge to the development of chick and the subsequent adult broiler. This is mainly due to poor temperature control and also to compromised ventilation in the broiler houses. Good stockmen have the responsibility to maintain a good environment for the chick to maximize the birds' genetic potential.



Temperature Management

Age (Days)	Whole-House Brooding Temp °C (°F)	Spot Brooding Temp °C (°F)	
		Brooder Edge (A)	2 m (6.6 ft) from Brooder Edge (B)
Day-old	30 (86)	32 (90)	29 (84)
3	28 (82)	30 (86)	27 (81)
6	27 (81)	28 (82)	25 (77)
9	26 (79)	27 (81)	25 (77)
12	25 (77)	26 (79)	25 (77)
15	24 (75)	25 (77)	24 (75)
18	23 (73)	24 (75)	24 (75)
21	22 (72)	23 (73)	23 (73)
24	21 (70)	22 (72)	22 (72)
27	20 (68)	20 (68)	20 (68)



Age 1 to 7 Days → 27 Degree Celsius Plus Temp

Age 27 Day onward (7 + 20) → 20 Degree Celsius

Temperature Management

COLD STRESS	COLD	OPTIMUM (Ambient)	WARM	HEAT STRESS
Below 10°C	10 – 18°C	18 – 24 °C	25 – 30°C	Above 30°C
Exhaustion	Adjustment	Comfort Zone	Adjustment	Exhaustion

To achieve maximum performance, poultry house Temperature must be kept consistently within the bird's thermo-neutral or **comfort zone**

Otherwise, the bird will expend additional energy to regulate its Body Temperature resulting poor Body Weight Gain & Poor FCR

The bird's comfort zone changes with age & is influenced by • **Body Weight**
 • **Ventilation** • **Feed Intake** • **Relative humidity** & • **Ambient temperature**

Ventilation Management

Ventilation is the **Min Amount of Air Volume** required to maintain full Genetic Potential by ensuring **sufficient Oxygen supply** while removing the waste products of growth & combustion from the environment



OBJECTIVE

- **To Provide Oxygen required for growth**
- **To Remove Water from faeces & vapour from broilers respiration to**
(At 10 days age, 15 broilers produce almost 1 litre water/Day, of which 25 to 40 % from faeces)
maintain the RH throughout the growing period and to maintain Good Litter condition
- **To Remove Excess heat created by birds and litter**
- **To Remove unhealthy gas: CO₂, NH₃, etc**

Ventilation Management

Air quality is critical during the brooding period.
Proper ventilation is required to maintain correct Temp and RH.

Improper ventilation leads to reduced air circulation, accumulation of Ammonia which results low Feed Intake, reduced Growth rate, Loss of Cilia in Trachea, which in turn leads to Sneezing & other abnormal Respiratory Sounds

Inadequate ventilation leads to high incidence of Ascites & Chronic Respiratory Disease.



Ventilation Management



Effects of Ammonia

Exposure (Calculated at Birds level)

Target	< 10 ppm
Human detection	> 5 ppm
Damage of Respiratory tract Cilia	20 ppm (3 min)
Poor Body weight & High FCR	25 - 51 ppm
Eye damage/Starvation/Dehydration	46 - 102 ppm (12 hrs)

Ventilation Management



Ventilation Management

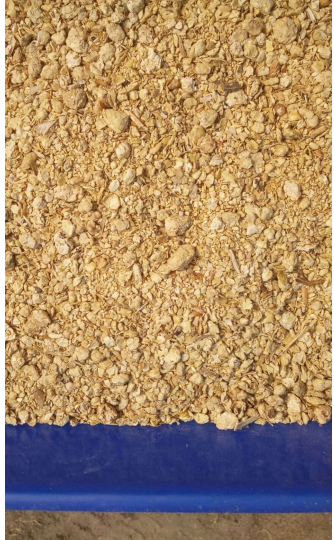
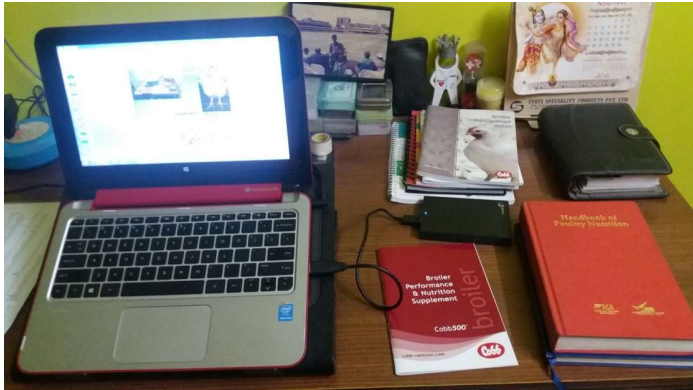


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Feeding Management



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Feeding Management

Manufacturing

- # **Formulation**
- # **Raw Material**
- # **Production Efficiency:**
 - a) Grinding,
 - b) Pre-mixing,
 - c) Pelleting &
 - d) Conditioning
- # **Physical Presentation:**
 - a) Particle Size
 - b) Hardness
 - c) Dust% &
 - d) Moisture%

Storage & Distribution

- # **Godown Quality**
- # **Storage System**
- # **Storage Time**

Application & Usage

- # **Health Management**
 - **General / Intestinal**
- # **Feeding Frequency**
- # **Feeding Technique**
- # **Drinking Water Quality**
- # **Equipment Quality**
- # **Farm Sanitation**

Feeding Management



MANUFACTURING

Feeding Management

Feeding Tips

- Use Aluminum bucket to give feed from bag
- Minimum 3 times feeding daily
- Fill feed 1/3 of a feeder at a time
- Cleaning Cone every time after feeding
- Cylinder cleaning every week



Feeding Management



Feeder Drinker Alignment



Feeding Management

- Feed bags must be stacked with a gap of 1 feet from the walls
- Feed bags to be stacked with a gap of 1 ft from the ground using wooden pallets
- First in First out (FIFO) system to be followed for feed distribution

FEED STORAGE



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Feeding Management



FEED Mis-Handling



Drinking Water Management

- **70% of Chicken Body Weight is Water**
- **For an optimal growth the Chicken should have free and convenient access to water**
- **1 day without Water in Broiler results zero Wt Gain & No Egg in Layer**
- **Water is an important nutrient, consumed in greater quantity (5 times of Maize) than any of the other nutrient**
- **Birds may Die rapidly from lack of water than due to lack of any of the other nutrients**
- **The Body Requirement of water varies with Age, Health, climate and Feed type**



Drinking Water Management

- Water is the major component of blood and plays main role in transporting Nutrients & Oxygen to the cells and carrying waste away
- Water is directly related with all physiological activities like Digestion, Respiration, Excretion, Production, Movement, Thermoregulation

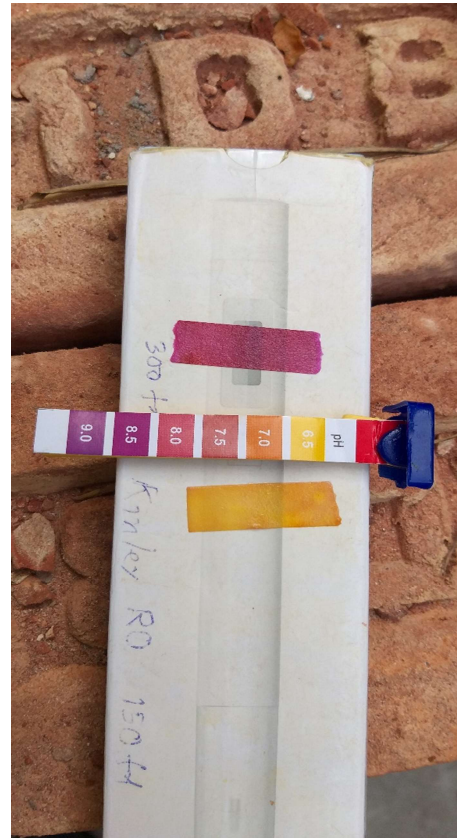
Ambient Temperature °C/°F	Feed vs Water Intake in Broiler
4°C / 39°F	1 : 1.7
20°C / 68°F	1 : 2
26°C / 79°F	1 : 2.5
30°C / 86°F	1 : 3.0
37°C / 99°F	1 : 4.5



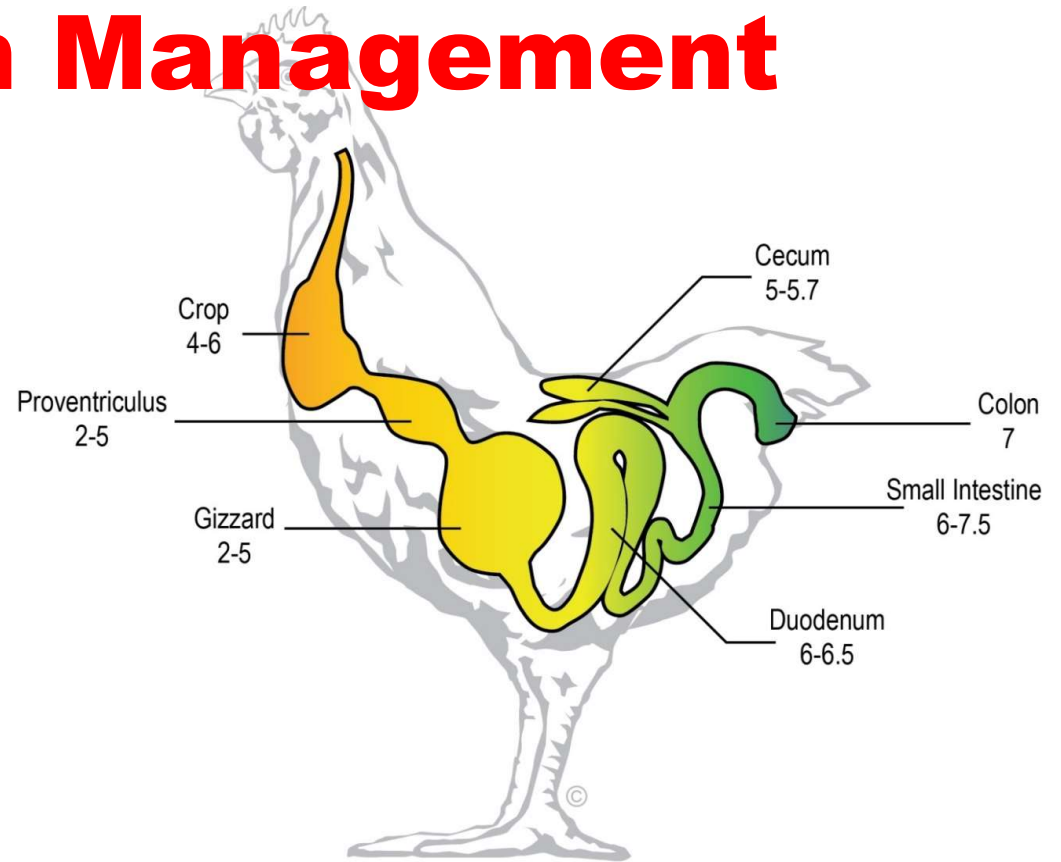
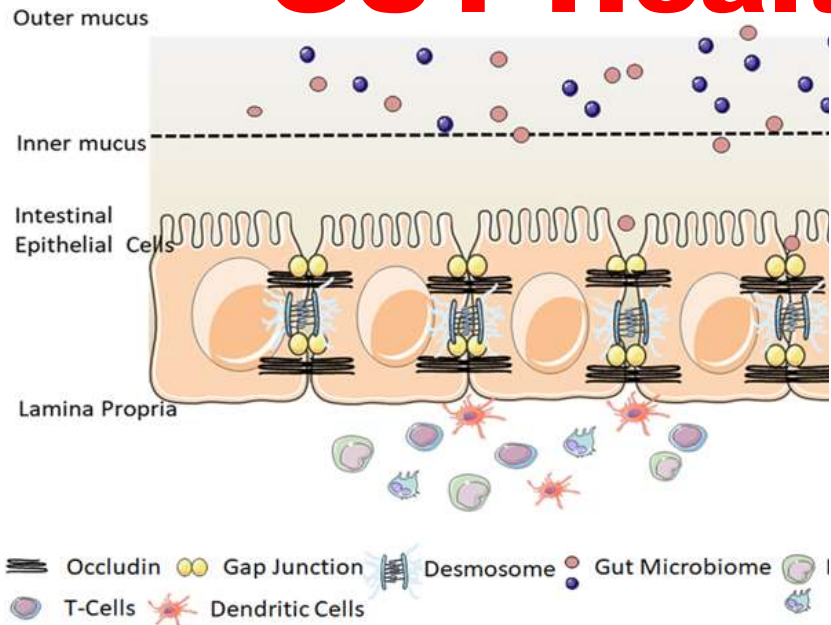
Drinking Water Management

Water Quality Parameter

- Presentation: Clear & Odourless
- Contamination: Free from Chemical & Bacterial contamination
- TDS/Hardness: < 200
- pH: 5 - 6

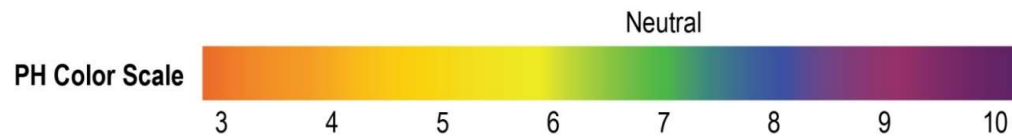


GUT Health Management



GUT HEALTH means Interconnection of these all 3 factors

- Good Structural Integrity of the Intestine; both gross & microscopic
- Healthy balance & Diversity of Gut Microbiota
- Healthy Status of Gut Immune system



GUT Health Management

Factor effecting Gut Health

- **INCUBATION:** Hatchery Temperature maintenance affects Gut development
- **BROODING:** Chick level Temp, early & easy access to feed & water
- **WATER QUALITY:** pH, Hardness (specially Fe), contaminations
- **STRESS/ WELFARE:** Stocking density, Temp, Ventilation, Space
- **FEED:** Feed form, Access to Feed, Feed Changes, MYCOTOXIN
- **NUTRITION:** Feed component, Particle size, Micro-nutrients, Enzymes, Anti-Nutritional factors
- **LITTER:** Material, Moisture%, Litter Ammonia
- **HEALTH INTERVENTION:** AGP, Therapeutic Antibiotic, Vaccination, Prebiotic, Probiotic
- **INFECTIONS:** Bacterial, Viral, Parasitic
- **GUT MICROBIOTA:** No of Species, Populations, Balance between Commensal & pathogenic, Competitive exclusions, etc
- **BIOSECURITY:** Hygiene, Sanitation



GUT Health Management

INCUBATION & BROODING on Gut Health



Hatchery Temperature control directly affect the length of Villi & depth of crypts, specially in Single Stage machine which finally impact broiler performance

Early & Easy access of Feed & water helps developments of intestine; which directly related to brooding efficiency, Temperature, Ventilation, Space & Lighting



GUT Health Management

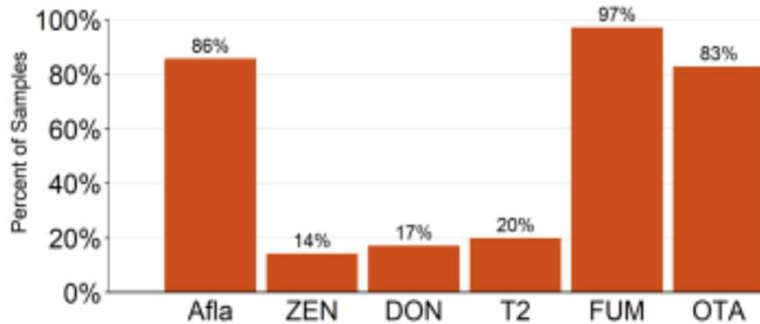
Mycotoxin and Gut Health

India Finished Feed Jan 2020 to Mar 2020

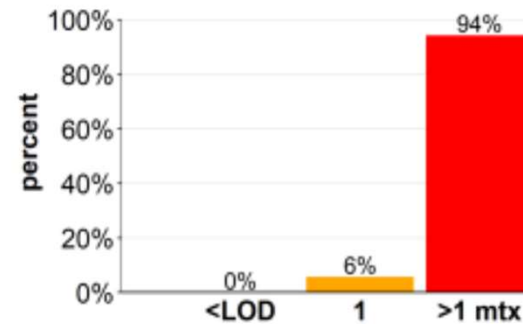
Total Risk Level: 97%*	Afla	ZEN	DON	T2	FUM	OTA
Number of samples tested	35	35	35	35	35	35
% Contaminated samples	86%	14%	17%	20%	97%	83%
% Above risk threshold	86%	9%	17%	0%	57%	37%
Average of positive (ppb)	84	100	385	30	889	14
Median of positive (ppb)	26	87	380	32	559	9
Maximum (ppb)	1252	261	480	37	4939	43



Prevalence of Mycotoxins Detected



No. of Mycotoxins per Sample



Mycotoxin Effect:

- Inhibition of Intestinal Cell (Villi Length & Crypt depth) Proliferation – Aflatoxin B1 & T2 Toxin
- Impact Nutrient Absorption – Ochratoxin A, Fumonisin B1 & DON
- Affect Tight Junction Integrity - Ochratoxin A, Fumonisin B1 & DON
- Inhibit Immunoglobulin Production – T2 Toxin & DON
- Inhibit Production of Cytokines – Fumonisin B1 & DON

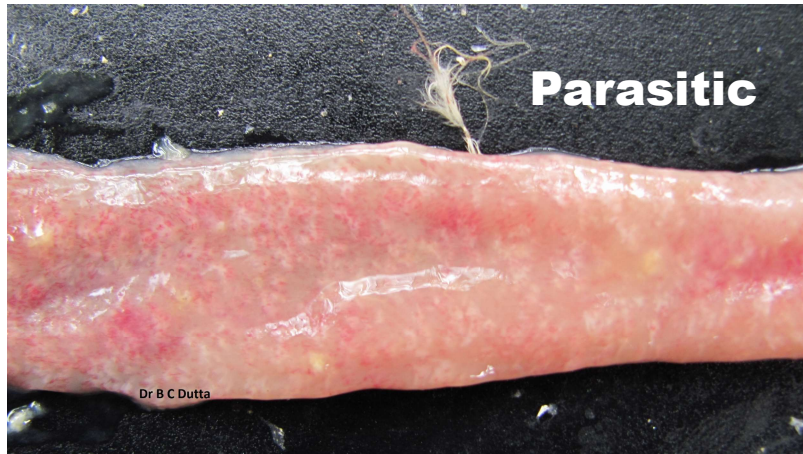
Naturally ahead

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Biomin

Loose Dropping & Feed passage is almost common in Broiler Farms

GUT Health Management

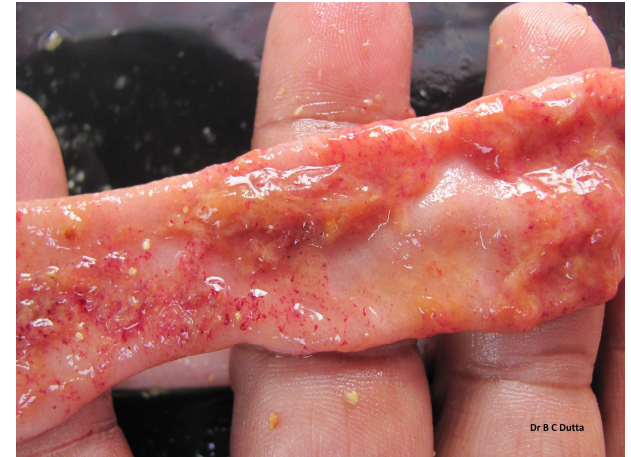


Infections and Gut Health

Gut health remain under pressure from both Clinical & Subclinical Infections at any stage of chicken's life

- Bacterial
- Viral
- Parasitic

Mortality may not be high but Performance is always Poor

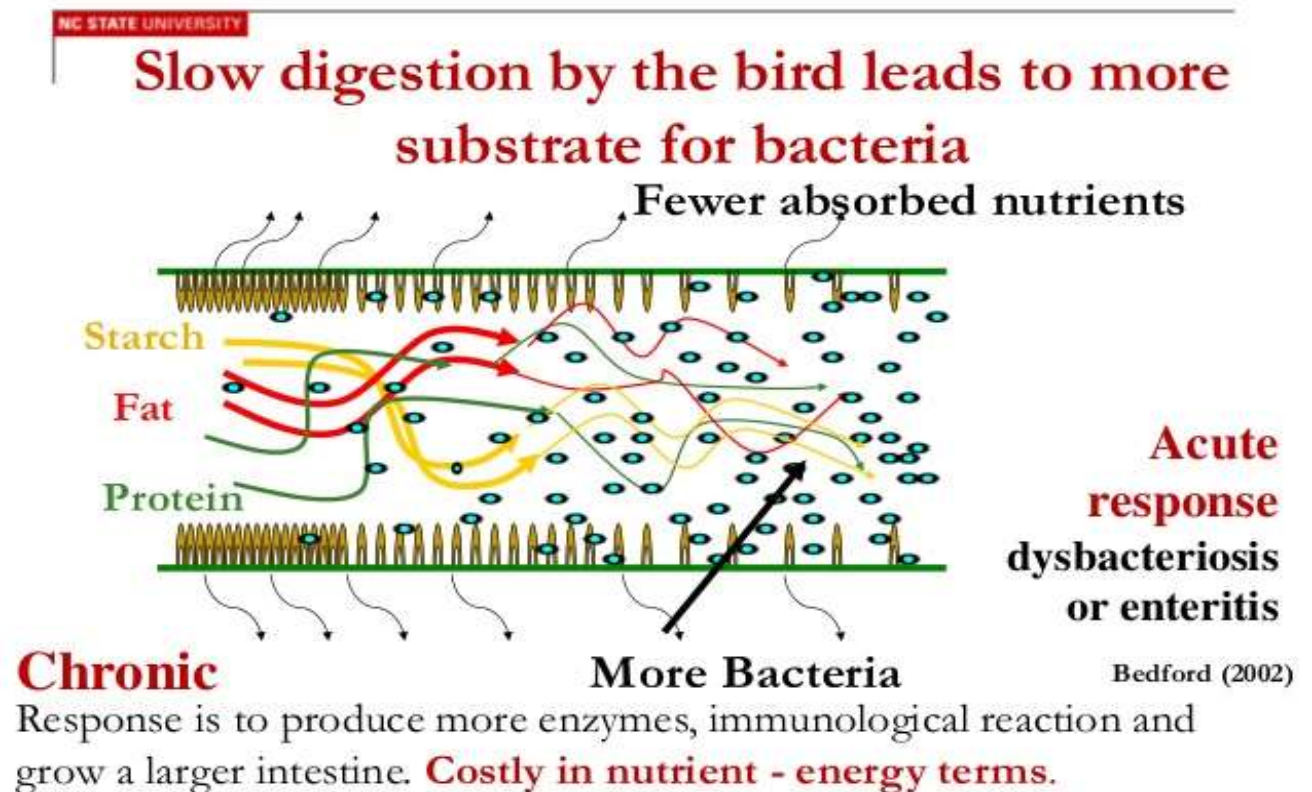


GUT Health Management

Effect of Gut Health Compromise

Deviation in Microbiota results Malabsorption

- Poor absorption of Fat, Protein & Carbohydrate
- **More Fat, Protein & Sugar available at hind gut; Caeca**
- More nutrients available for microbes



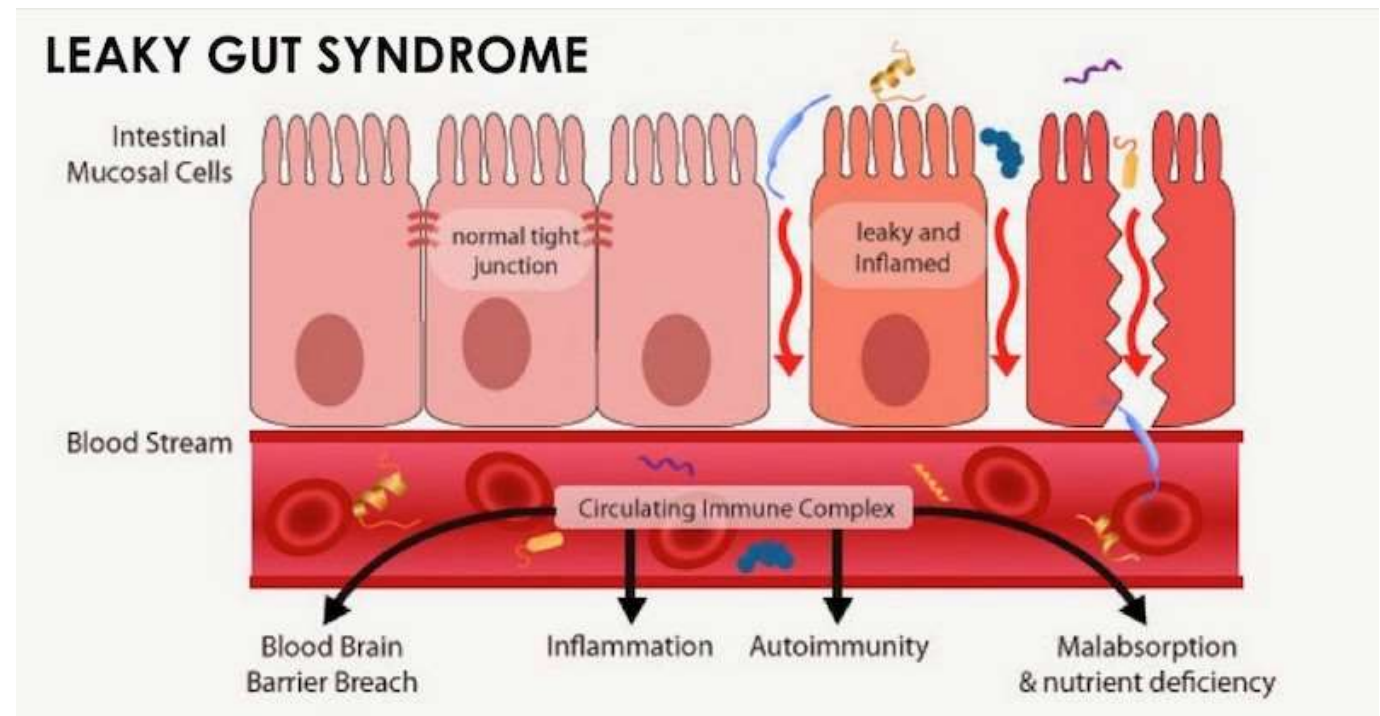
GUT Health Management

Effect of Gut Health Compromise

This leads to further disruption & damage of Intestinal mucosa leading to many more infections

Unwanted Microbial Overgrowth

- Excess Production of Toxic gas like CO₂, NH₃ & H₂S
- Production of Toxic chemical (Amines); irritates gut & reduced body growth
- Inactivation of Bile acid impacting Fat absorption
- Immune reaction leading to Leaky Gut



GUT Health Management

How to Promote Gut health

Development

- Gut Tissue
- Gut Immunity
- Gut Microflora

Setting up the gut for the Life ahead

Transition

- Feed Changes
- Vaccination
- Transfer
- Environmental Stress
- Handling

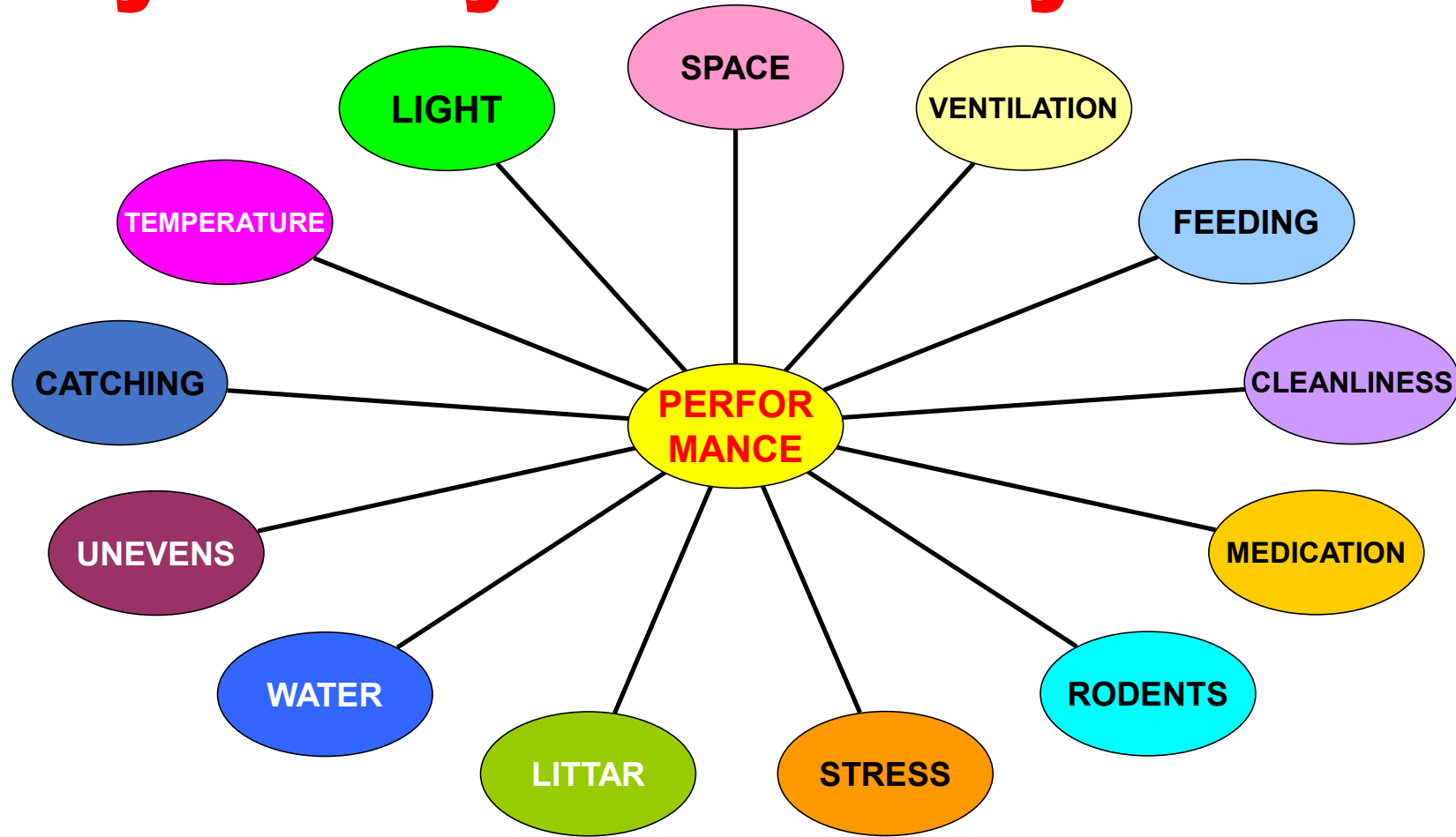
Prevent reduction of nutrient uptake and overgrowth of unfavourable bacteria

Maintenance

- Gut build up
- Stable Microflora
- Promote Integrity

Ensure the Gut is supported to conserve Homeostasis

Day-to-Day Husbandry Practise



Day-to-Day Husbandry Practise

LITTER MANAGEMENT

Litter is a harmless, soft, fibrous material used as bedding, which helps facilitate evaporation of moisture & gases from Fecal materials

- Absorb moisture from the droppings quickly
- Absorb less moisture from atmosphere & dry rapidly
- Least tendency to form cakes
- Light in weight, and free from molds
- Non-toxic, bio-degradable, cheap & locally available
- Uniform particle size
- Soft and compressible
- Low Thermal Conductivity



Day-to-Day Husbandry Practise

Causes of Caked Litter

- Humid or Cold Surface
- Insufficient, Non-absorbent or Too Compacted
- High Stocking Density or Over-Crowding
- Insufficient Ventilation or Poor Air Circulation
- Infections
- Poor Water quality
- Poor Drinker Adjustment resulting Leakage
- Cold Climate
- Feed & Nutrition



Day-to-Day Husbandry Practise

Consequences of Poor Litter



Day-to-Day Husbandry Practise

STRESS Management

Avoid Avoidable Stress

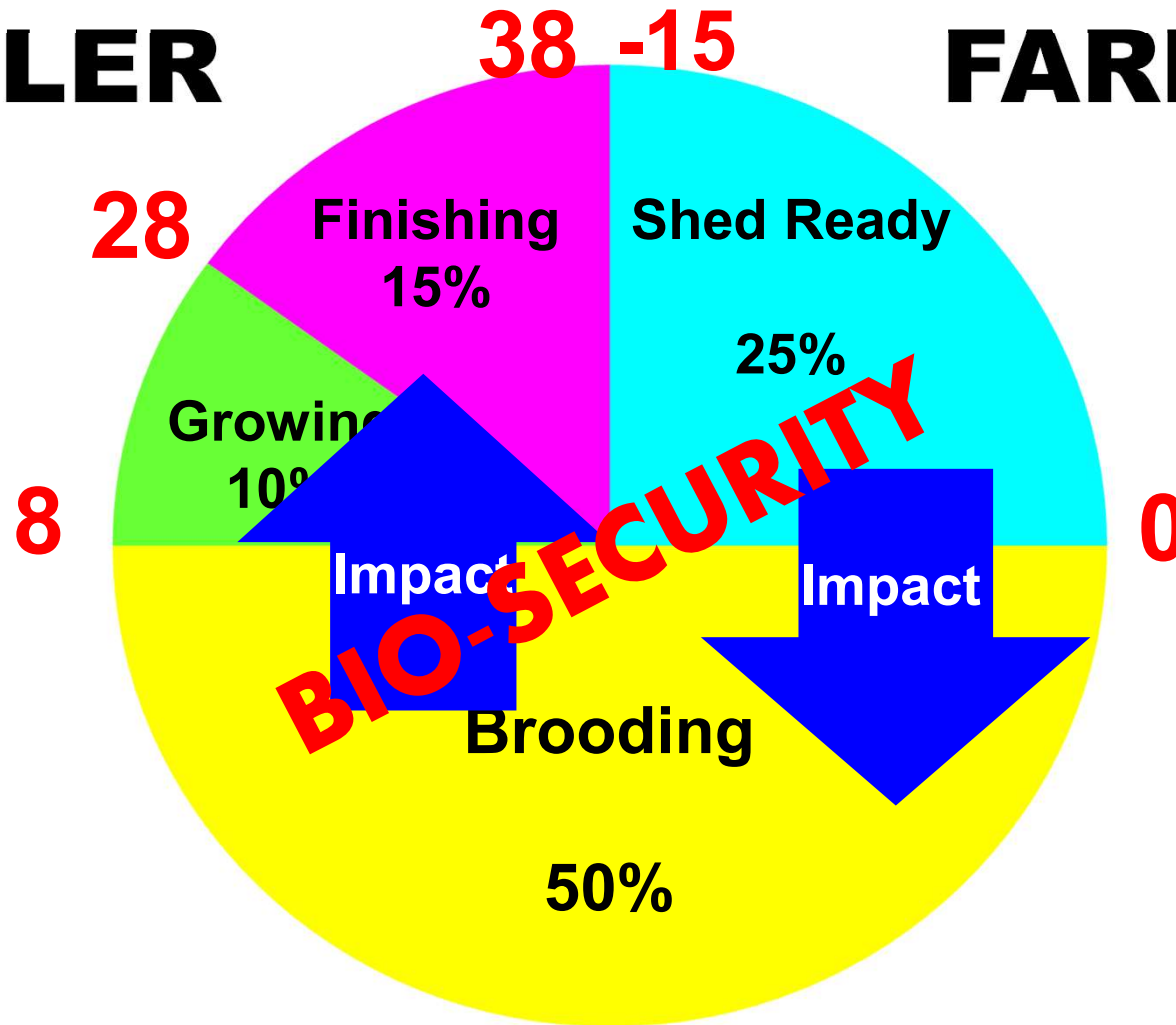
- Overcrowding
- Poor Ventilation
- Wet Litter
- High Ammonia
- Dehydration
- Poor Management
- Mycotoxin
- Starvation
- Disease

Minimize Un-avoidable Stress

- Extreme Climate; Heat, Chilling, Humidity
- Rapid Growth
- Handling
- Vaccination
- Transportation
- Routine Medication
- Debeaking

BROILER

FARMING



THANK YOU