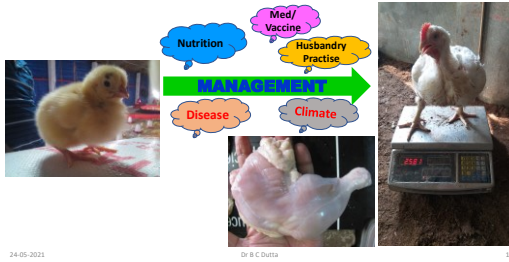


### COMMERCIAL BROILER MANAGEMENT



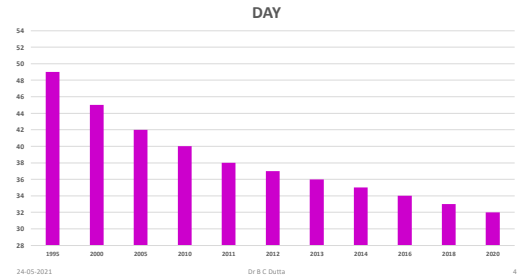
### COMMERCIAL BROILER MANAGEMENT



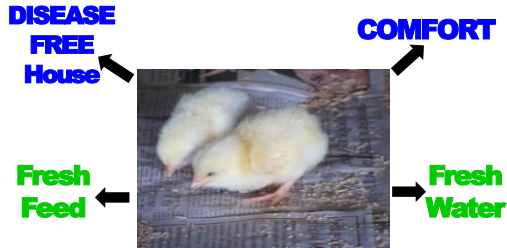
### GENETIC POTENTIAL OF TODAY'S BROILER



### NO OF DAYS TO 2 KG BODY WEIGHT



**BASIC NEED OF CHICKS**

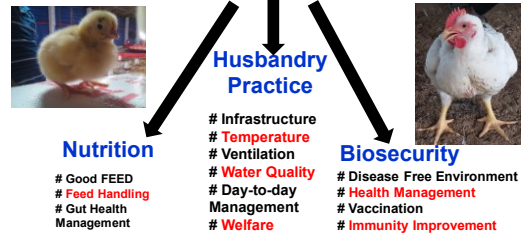


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**REQUIREMENT OF TODAY'S BROILER CHICKS**



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**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

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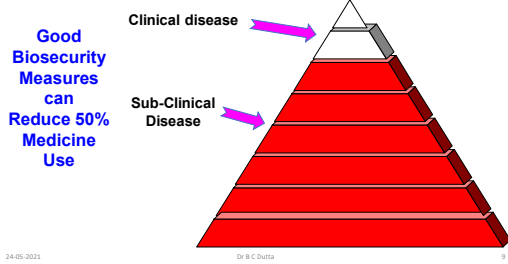


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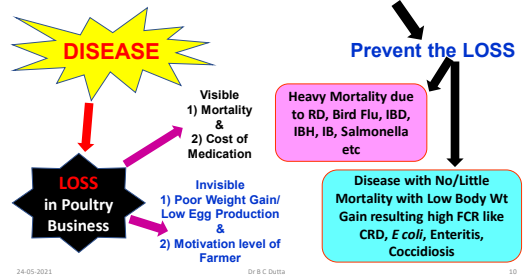
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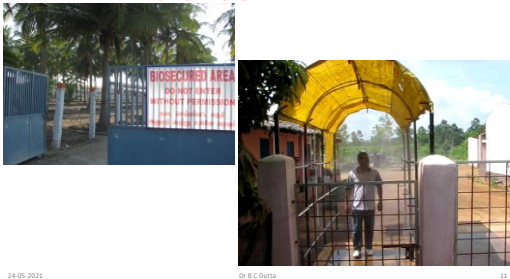
### Economic Benefits of Biosecurity



### BIOSECURITY OBJECTIVE



### BIO-SECURED FARM



### BIOSECURITY - NOT Like these



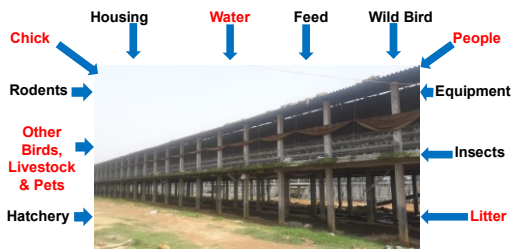
### BIOSECURITY – Like these



### BIOSECURITY – Like these



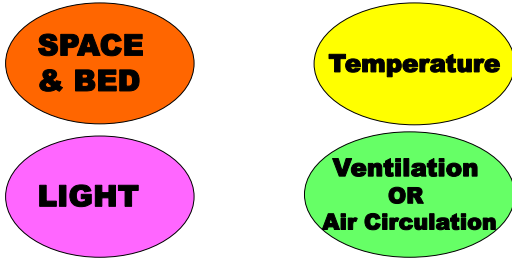
### ROUTES OF DISEASE ENTRY



### HAND OF BIOSECURITY



## COMFORT



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## 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

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

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



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## SPACE & BED (Litter) MANAGEMENT

In EC Shed, Stocking Density Influences

- Broiler Performance
- Uniformity
- Bird Welfare
- Profitability

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

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



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## 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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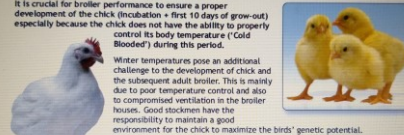
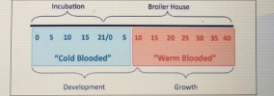
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## TEMPERATURE MANAGEMENT

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.

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## 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 (76)	25 (77)	24 (76)
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)

**Temperature Management**

Because of their high surface-to-body mass ratio, chicks lose heat very quickly. Maintaining the proper ambient temperature ensures chicks stay healthy and reach their full weight potential.



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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

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## TEMPERATURE MANAGEMENT



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

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## 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**

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## 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.

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## 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)



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## VENTILATION MANAGEMENT



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## VENTILATION MANAGEMENT



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## FEEDING MANAGEMENT



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## FEEDING MANAGEMENT

Manufacturing	Storage & Distribution	Application & Usage
<ul style="list-style-type: none"> <li># <b>Formulation</b></li> <li># <b>Raw Material</b></li> <li># <b>Production Efficiency:</b> <ul style="list-style-type: none"> <li>a) Grinding,</li> <li>b) Pre-mixing,</li> <li>c) Pelletting &amp;</li> <li>d) Conditioning</li> </ul> </li> <li># <b>Physical Presentation:</b> <ul style="list-style-type: none"> <li>a) Particle Size</li> <li>b) Hardness</li> <li>c) Dust% &amp;</li> <li>d) Moisture%</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li># <b>Godown Quality</b></li> <li># <b>Storage System</b></li> <li># <b>Storage Time</b></li> </ul>	<ul style="list-style-type: none"> <li># <b>Health Management</b></li> <li>- <b>General / Intestinal</b></li> <li># <b>Feeding Frequency</b></li> <li># <b>Feeding Technique</b></li> <li># <b>Drinking Water Quality</b></li> <li># <b>Equipment Quality</b></li> <li># <b>Farm Sanitation</b></li> </ul>

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## FEEDING MANAGEMENT



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### FEEDING (TIPS) MANAGEMENT

- 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



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### FEEDER DRINKER ALIGNMENT



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### FEED STORAGE AT GODOWN & FARM

- 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



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### FEED MIS-HANDLING



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## 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



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## 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



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## WATER QUALITY PARAMETER

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

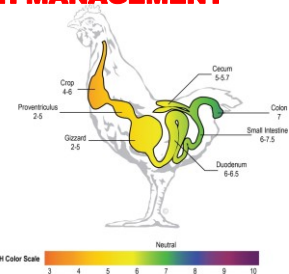
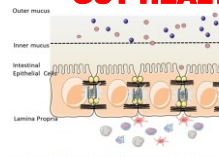


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## GUT HEALTH MANAGEMENT



- 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

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## FACTOR AFFECTING 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



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## 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

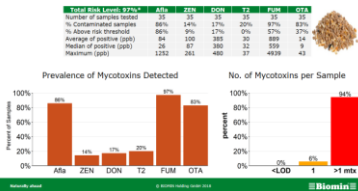
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## MYCOTOXIN & GUT HEALTH

India Finished Feed Jan 2020 to Mar 2020



- Mycotoxin Effect:**
- Inhibition of intestinal Cell (Villi Length & Crypt depth) Proliferation – Aflatoxin B1 & T2 Toxin
  - Impact Nutrient Absorption – OchratoxinA, 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

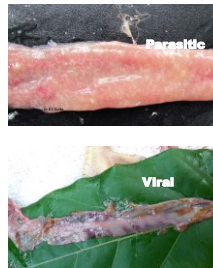
Loose Dropping & Feed passage is almost common in Broiler Farms

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## INFECTIONS & 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



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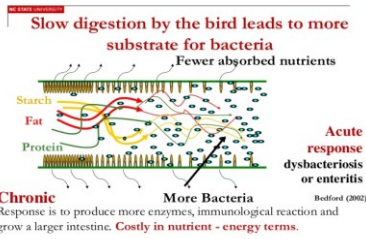
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## EFFECT OF GUT HEALTH COMPROMISE

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



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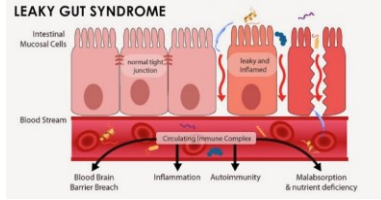
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## EFFECT OF GUT HEALTH COMPROMISE

Unwanted Microbial Overgrowth

- Excess Production of Toxic gas like CO<sub>2</sub>, NH<sub>3</sub> & H<sub>2</sub>S
- Production of Toxic chemical (Amines); irritates gut & reduced body growth
- Inactivation of Bile acid impacting Fat absorption
- Immune reaction leading to Leaky Gut

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

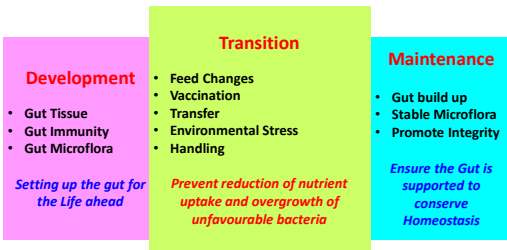


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## HOW TO PROMOTE GUT HEALTH?

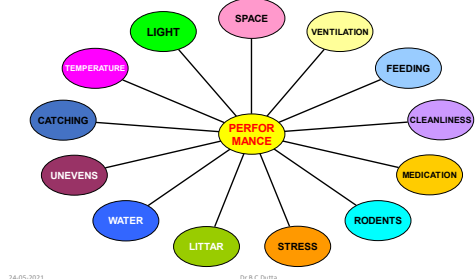


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## Day-to-Day HUSBANDARY PRACTICE



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## 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



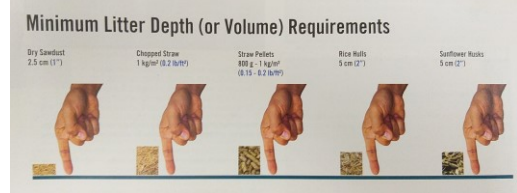
- Rice Husk is the best Litter material besides Saw dust, wood flakes, etc
- Litter Thickness: 2.5 Inches or 450gm/Chick

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## LITTER MANAGEMENT



- Rice Husk is the best Litter material
- Litter Thickness: 2 Inches or 400gm/Chick

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## LITTER MANAGEMENT

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



**Causes of Caked Litter**

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## LITTER MANAGEMENT

### Consequences of Poor Litter



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## STRESS MANAGEMENT

### Avoid Avoidable Stress

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

### Minimize Un-avoidable Stress

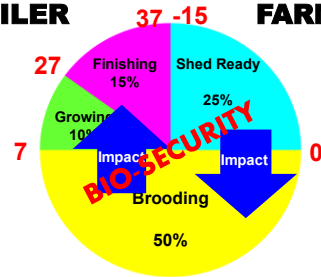
- Extreme Climate; Heat, Chilling, Humidity
- Rapid Growth
- Handling
- Vaccination
- Transportation
- Routine Medication
- Debeaking

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## BROILER FARMING



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# THANK YOU

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