CHANGING SCENARIO IN CONTEMPORARY POULTRY HOUSING

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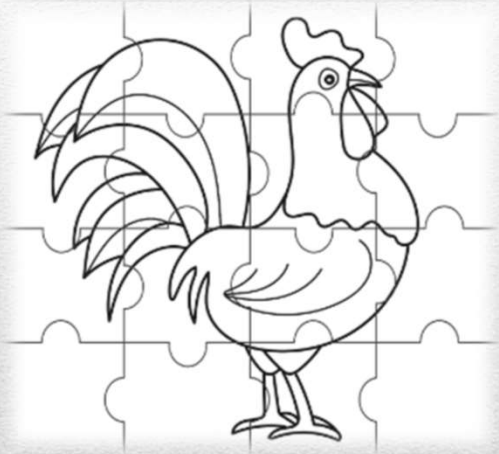
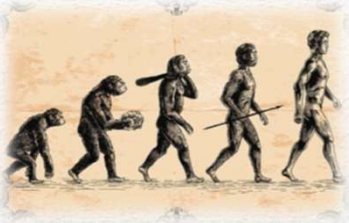
The Poultry Sector – A Silent Sustainer



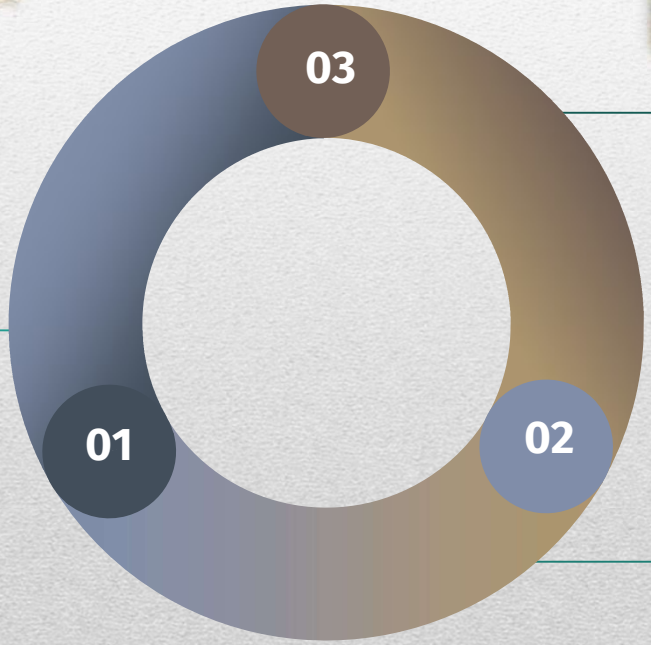
Always believed that the Poultry sector is a silent sustainer in true sense. When we closely study the SDG's for Developing countries, Zero Hunger and Good Health goals can be directly met with growth in Protein Business. The Chicken and Egg story begins……

Evolution



Environmentally Controlled Farms

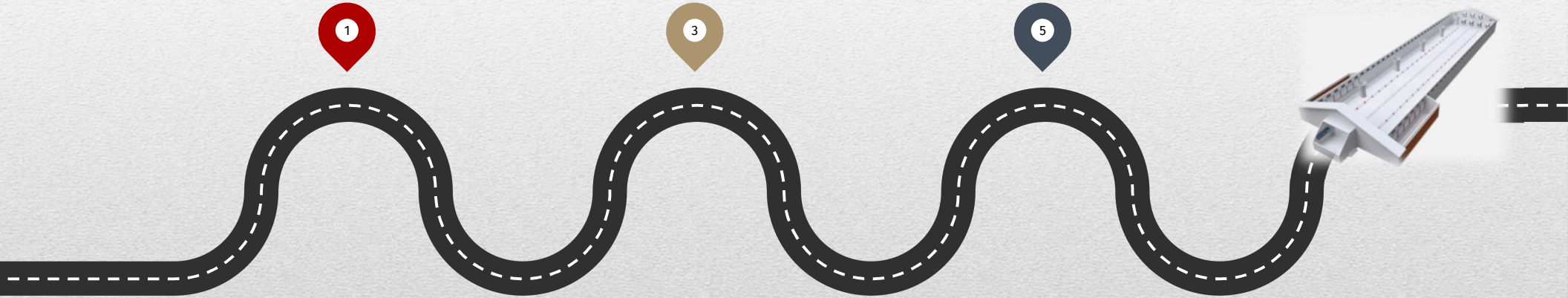
Open house poultry farming



Backyard poultry farming

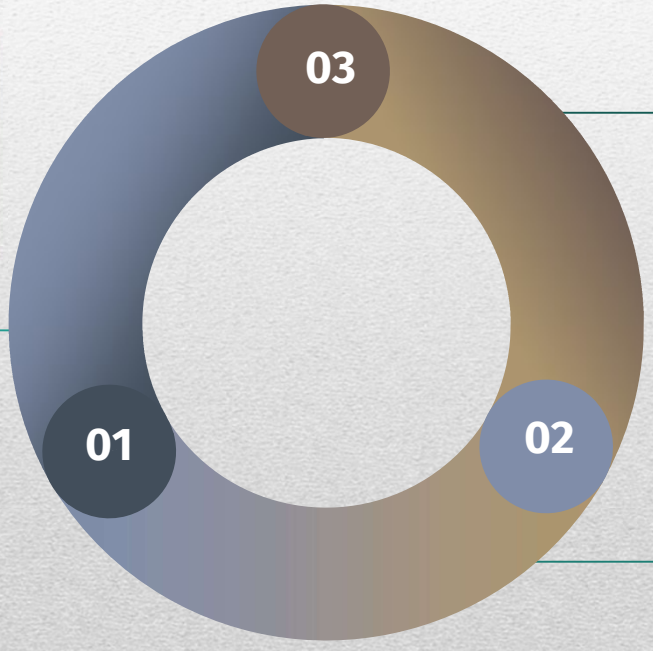
Roadmap

1. Conventional Housing
2. Semi conventional Housing (advanced feeding / watering system)
3. Partial EC housing (tunnel ventilation)
4. Complete EC housing (tunnel ventilation with auto feeding/watering)
5. EC (combi-tunnel) with partial automation
6. EC with complete automation



Sectors embracing technological advancement

BREEDERS

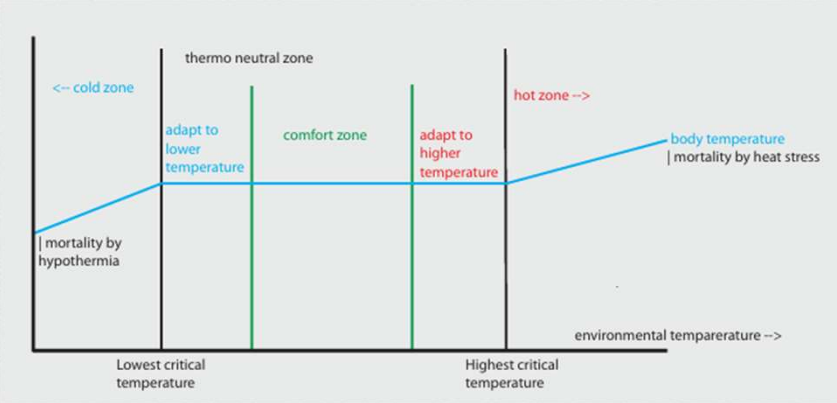


LAYERS

BROILERS

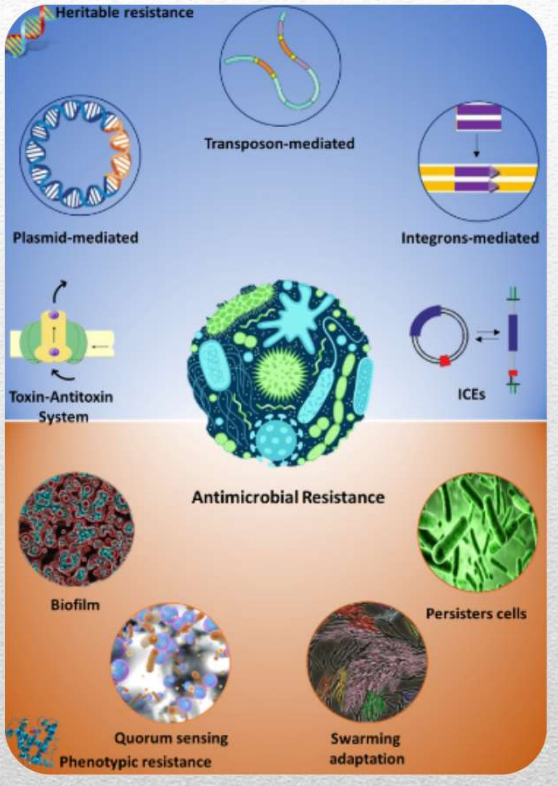
Conventional poultry farming

- Disease migration / biosecurity hazard
- Climate resilience – heat waves/cold waves/rains/dust storm
- Unrealized Phenotypic expressions – P = G x E interactions
- Higher manpower demand
- Fluctuating water consumption
- Waste generation and disposal
- Variable humidity leading to higher respiratory challenges
- Higher carcass condemnations (ill managed open farms)

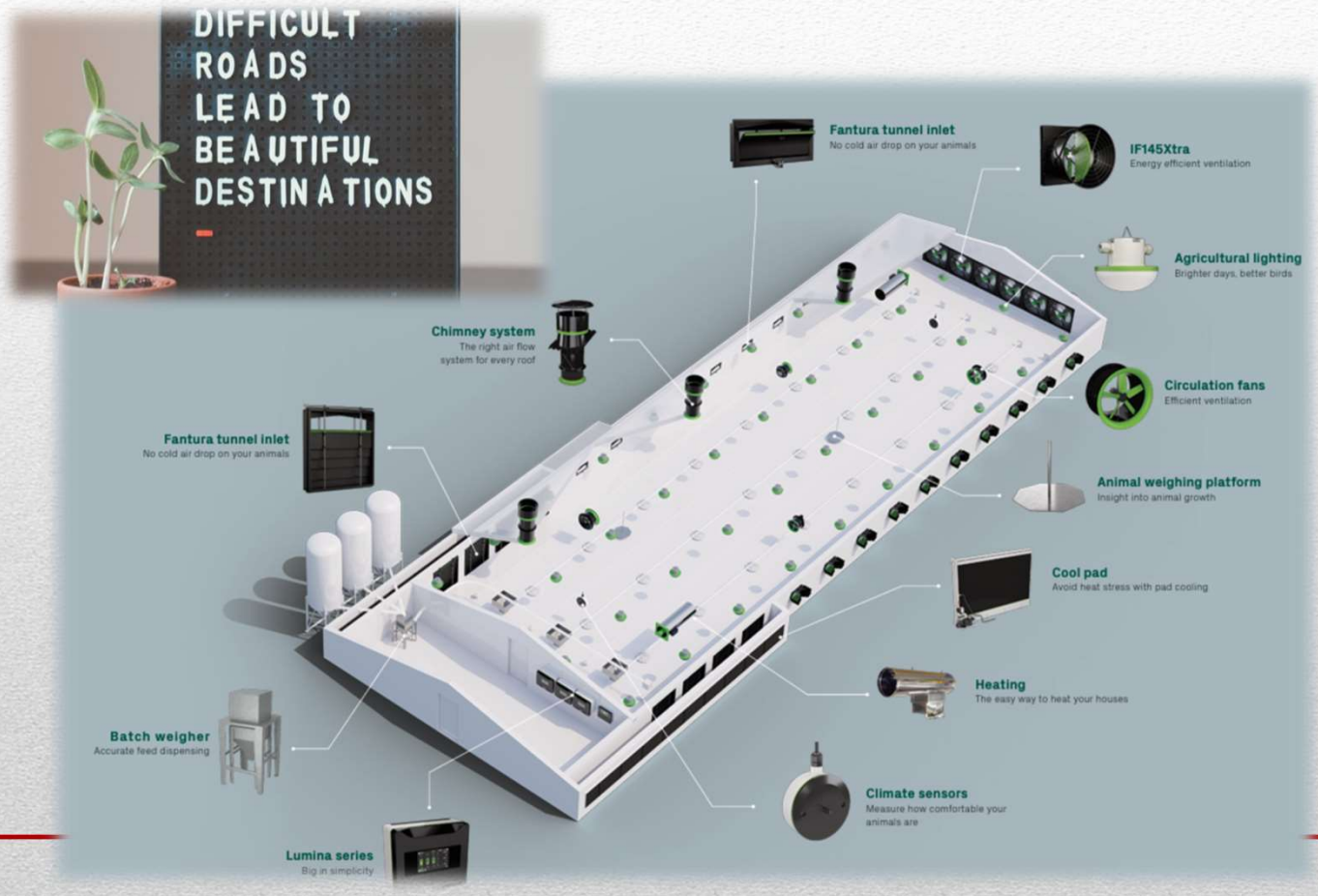


Embracing Technology Advancements

Rising concern of AMR

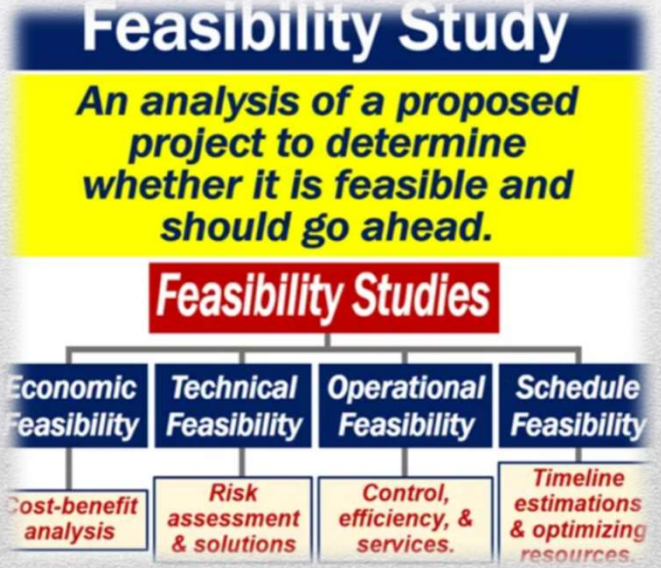


Adopting EC – the natural migration

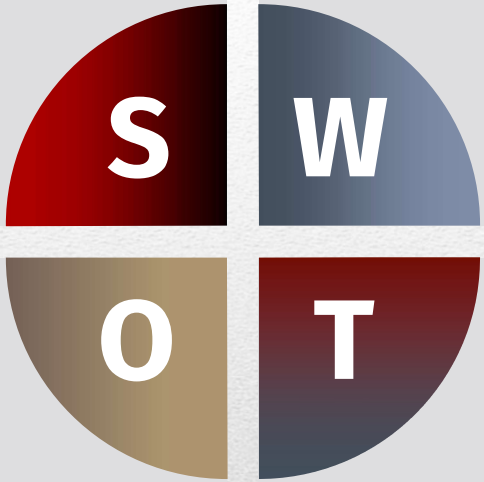


Considerations for optimizing the project outcome

- Techno Economic Viability Analysis (TEV)
- Return of Investment (ROI)
- Pay back period (PB), Internal rate of return (IRR) and Net present value (NPV)
- Risk estimation
- Market niche and seasonality
- Biosecurity & welfare
- Logistics & traceability



SWOT Analysis



STRENGTHS

Climate change adaptations / Controlled morbidity / Better uniformity & flock health

WEAKNESSES

Capital intensive / Understanding PB, IRR and NPV/ Lack of basic entrepreneurship knowledge and skills / lack of trained technicians / low usage of research findings

OPPORTUNITIES

Less land requirement / Higher flock densities / AGP free / NAE production / Clean flocks – eggs / certified products / near organic farming

THREATS

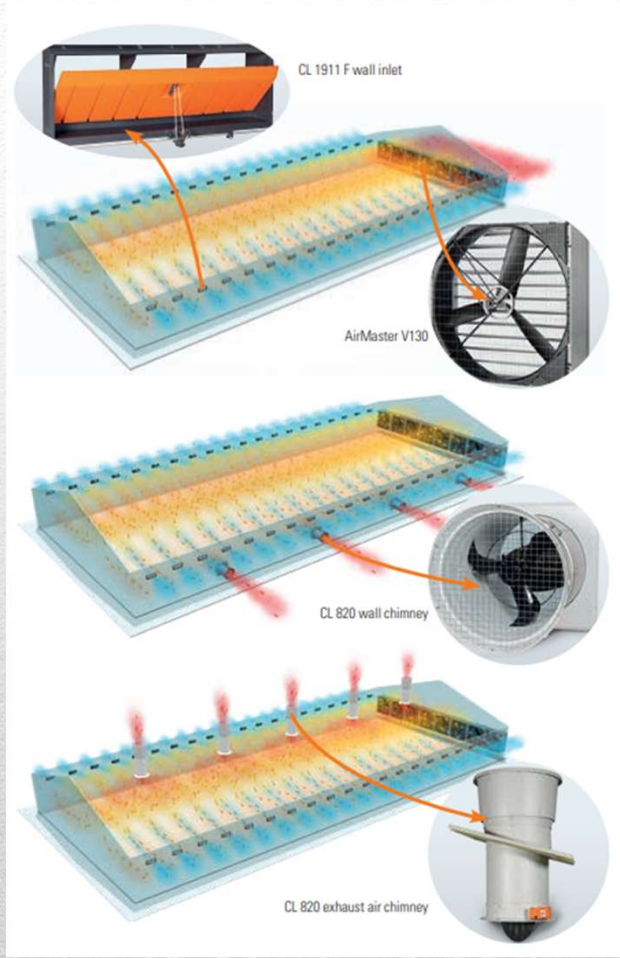
Greater loss in case of outbreaks / transportation challenges under open conditions post EC rearing

Breeder EC

- Combi-Tunnel all weather system based breeder houses
  - Deep litter cum Slat system with natural mating
  - Multi Tier Battery cages with automatic feeding/drinking systems, lighting, egg collection and manure removal except AI

Broiler EC

- Combi-Tunnel all weather system based broiler houses
  - Deep litter system with automatic feeding/drinking
  - Multi Tier Battery cages with automatic feeding/drinking systems, lighting and manure removal



Layer EC

- Combi-Tunnel all weather system based layer houses
  - Multi Tier Battery (H) cages with automatic feeding/drinking systems, lighting, egg collection and manure removal
  - (A) cage based housing with manure belt

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PILLARS OF EC HOUSING

Light management – forward thinking

- Lighting plan promotes welfare of poultry
- Light plans should have scope of variable light intensities, smooth dimmability with pauses
- Variable photoperiods promote growth.
- Energy savings are additional benefits of dimming the lights

Flexible light control

- Lighting in a poultry house is an important factor in realizing a good technical performance
- The light colour, spectrum and intensity influences behaviour and consequently their growth and production
- Flexible light control helps to maintain a calm atmosphere in the house and limit feather pecking and cannibalism
- Light control also limits floor eggs
- Chickens see more than humans
  - The visible spectrum is wider (sensitive to red, blue, green and UV light)
  - The light stimulates the biorhythm of the chicken
    - Red – stimulates sexual maturity
    - Green – positive effect on growth
    - Blue – calming effect

Water management

- Continuous water monitoring – leaks / water meter / detecting heat stress
- Use of in-shed sprinklers to optimize water consumption through evaporative cooling
- In-shed sprinklers must have controller to detect burst and auto turn off
- To ensure best cooling and drier litter, sprinkler should have connections with temperature sensor and auto on/off facility at an interval of every 40 m within the house

Recirculating Evaporative Cooling System

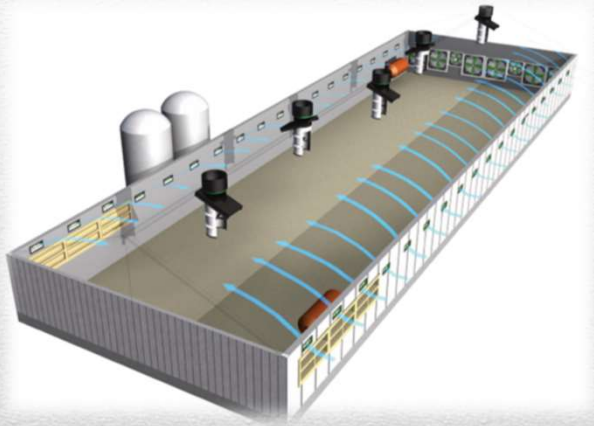
Energy saving ventilation

- Ventilate accurately, never too much and never too little
  - Use of air flow transmitter
  - Use of smart fans with variable RPM
  - The control valves between the air flow transmitter and the fan regulates the size of the opening for exhaust

Output	Number of fans	Consumption
20.000 m3	1 x I-fan80 at 100%	0,75 kWh
20.000 m3	2 x I-fans80 at 50%	0,30 kWh
20.000 m3	4 x I-fans80 at 33%	0,22 kWh

The importance of minimum ventilation

- Sufficient minimum ventilation gets your bird to a good start
  - It extracts CO_2, NH_3, moisture, heat & dust to introduce O_2 rich air
- A good gas balance particularly important for young birds are desired for organ / skeletal growth and robust immune system



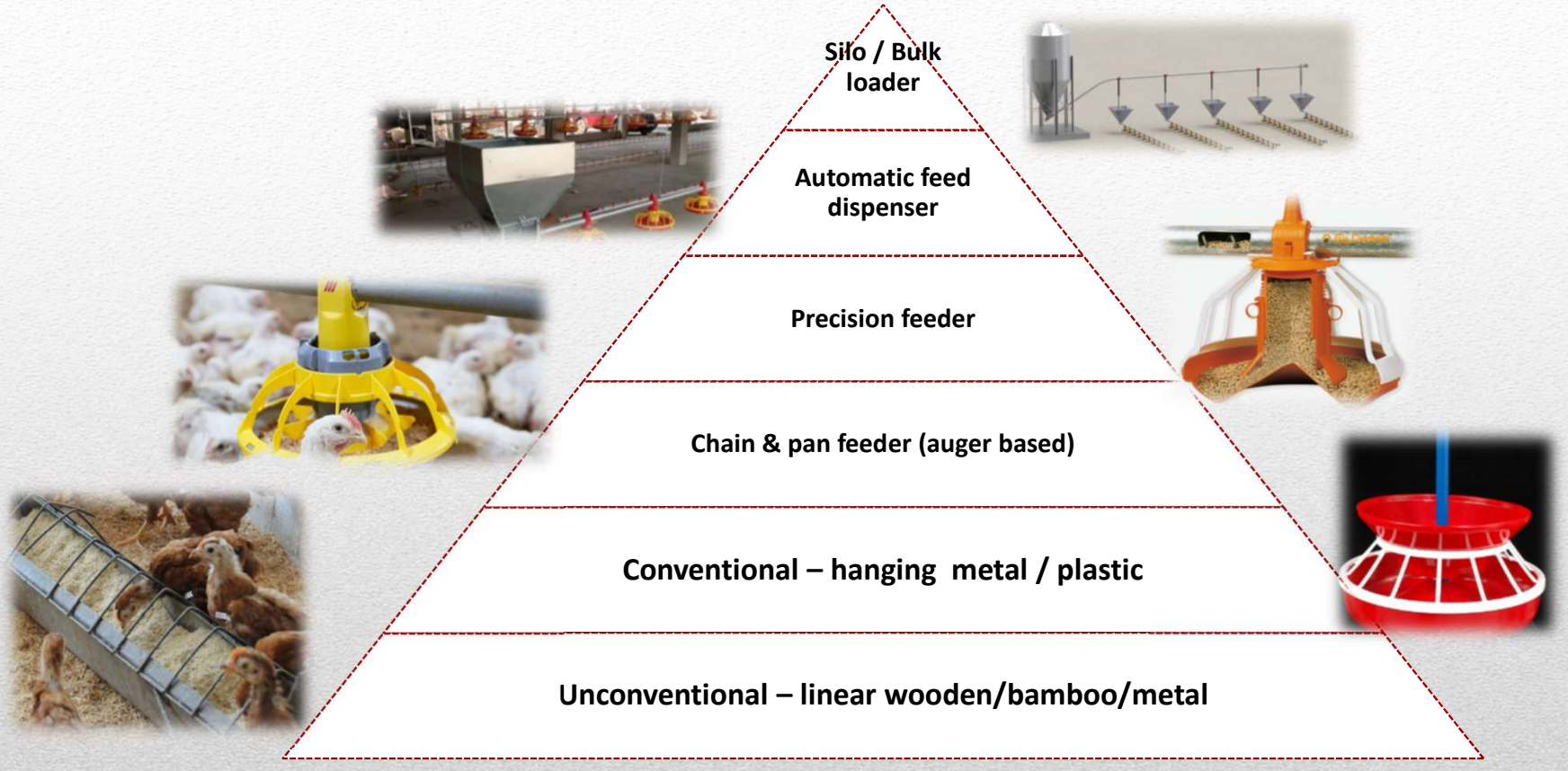
Right level of minimum ventilation

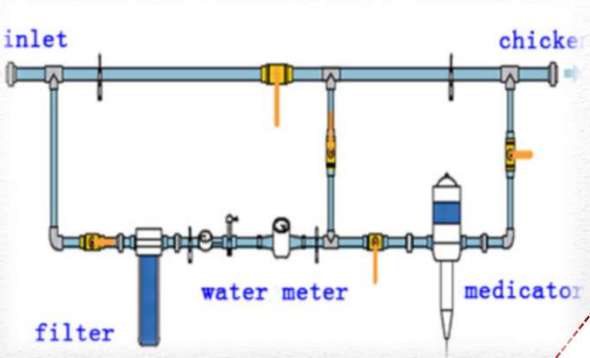
- Depends on the age / weight of the bird, outside temperature, humidity and internal heating capacity
  - Ensure the house is air tight
  - Choose the right air inlet system
  - Choose suitable fans
  - Choose a suitable heating system

Selecting the right computer based control system

- Computers automate processes like
  - Automatic feed / water distribution
  - Bird weighing / Egg counting
  - Climate control
  - Health & behavior monitoring
  - Data comparison on pre set growth curves

Changing scenario in Feeding system





Automatic water dosing system with water meter

Sanitized water through IRF / UV

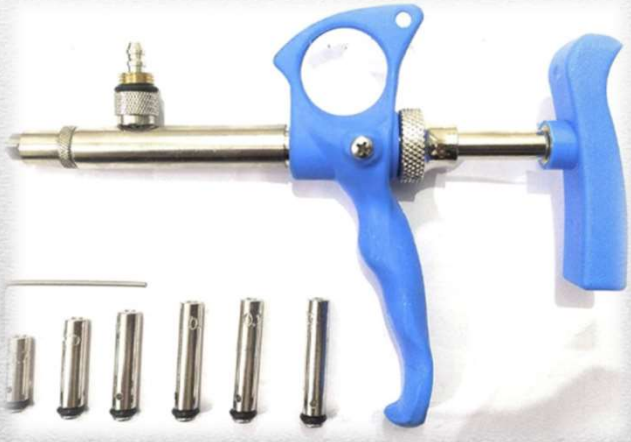
Raw water >>> Sanitized water through nipple drinker

Bell shaped auto drinker

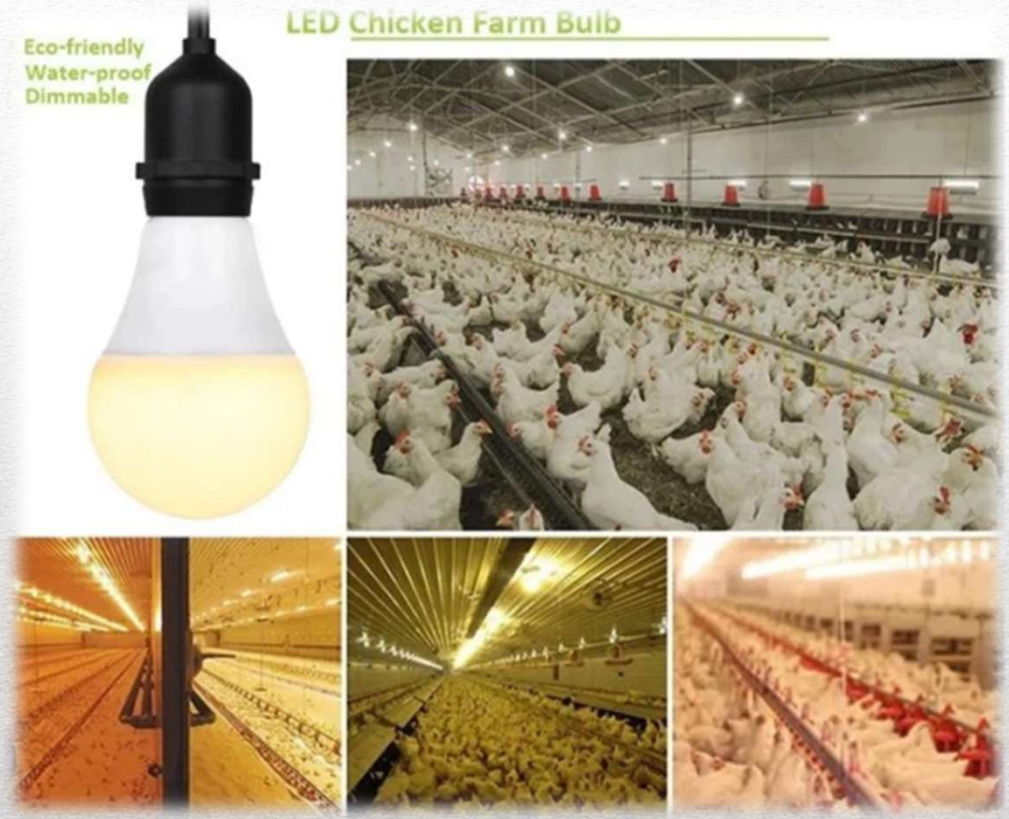
Conventional – manual

Unconventional – pan

Changing scenario in Watering system



Changing scenario in Vaccination



Changing scenario in Lighting

Modern farm house innovations

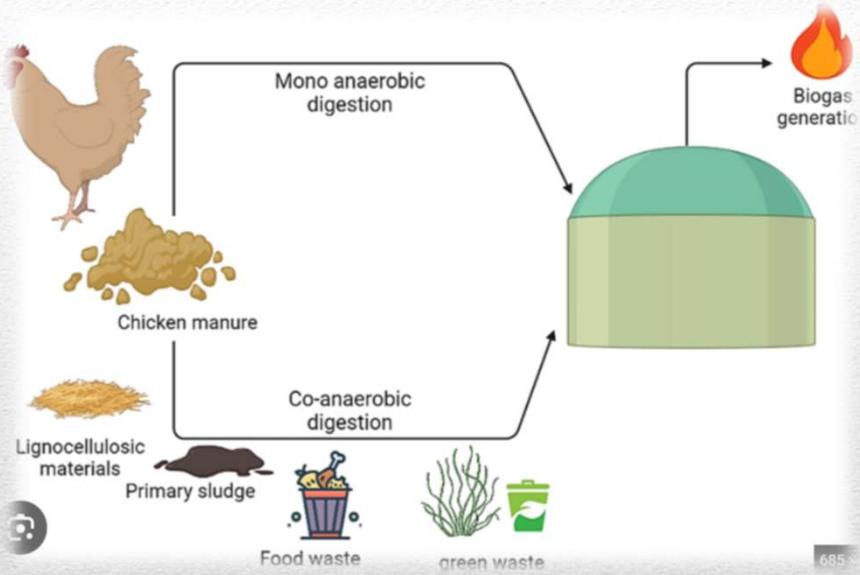
- Public access control system with automatic showers, concrete flooring between houses to reduce vegetation, pad cooling with easy cleaning and disinfecting even when birds are present.
- Chain-feeder technology promotes efficient feed distribution by accurately measuring feed and providing uniform nutrition for every bird.
- Fluid LED light level control, flicker free lighting system, with multiple light level settings.
- Air Quality Monitor is designed to sample the air within the building every two minutes, and display the following air quality information CO2 / Ammonia / Humidity / Temperature.

Modern farm house innovations..contd..

- Water system designs to keep water uncontaminated by preventing dirt, faeces and other pollutants from entering the automatic drinking system.

- Innovative waste management methods: Manure belt systems in egg production. Pelletization of dried manure further stabilizes the material, reducing dust. Some countries are using Black soldier fly (BSF) larvae are an alternative system for manure treatment.

- Remote Access Livestock Monitoring: Our Livestock Monitoring System allows poultry farmers the ability to view their broiler sheds internally from their smartphones, tablets and personal computers, in great detail they can view feed and drinker lines, hoppers, bird spread, all without the need to enter the houses as regularly as they normally would.



Adoption to Green technology

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