PADMASHREE Late DR.B.V.RAO, SIR

FATHER OF INDIAN MODERN POULTRY

Smart Layers Management Addressing Common Issues in Commercial Egg Production

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VH-GROUP

SMART LAYER FLOCKS MANAGEMENT

To follow---Standard Protocols

Field applications involved in the Management

Ultimately GOAL

- **GOOD PRODUCTION & PROFITABILITY to the farm.**
- **Success Focused on THREE MAJOR areas.**

A- FARM & FLOCK Management

B- Disease Management (Vaccines &Vaccination)

C- BIO-SECURITY

FARM & FLOCK Management

FARM

- LOCATION of FARM, i.e **SITE**
- COMMUNICATION
- GROUND WATER Availability & QUALITY
- VENTILATION
- MANPOWER

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SMART FARMING Management

- **EXCELLENT FLOCK PERFORMANCE depends**

  1st is THE FARM OWNER ENTREPRENEUR

  EFFICIENCY **/ SMARTNESS** of **MANAGER**

  Shed SUPERVISORS

  Shed WORKERS

- **IMPORTANTLY it depends how the MANAGER Efficiently makes Exclusive & routine works from the WORKERS.**

FARM MANAGER's ACTIVITY

- The FARM MANAGER must know what he should get from the LAYER BIRD /FLOCK

Livability%- 0 to 18 weeks : 96 – 98

19 to 80 weeks : 93

Body Weight- 16 weeks of age : 1.10 kg

22 weeks of age : 1.40 kg

32 weeks of age : 1.50 kg

Egg Production- 50% ---- 20th -21st wks

97-98% -------- Peak Prodn.

>90% -------- 43-45 wks

Hen Housed -------80th wks --appox—375-386 eggs

BROODING is very very IMPORTANT

During arrival DOC appox. avg.B.wt- 32- 36 gms.

It grows- By **PROPER NUTRITION**

CLEAN SANITIZED WATER Consumption

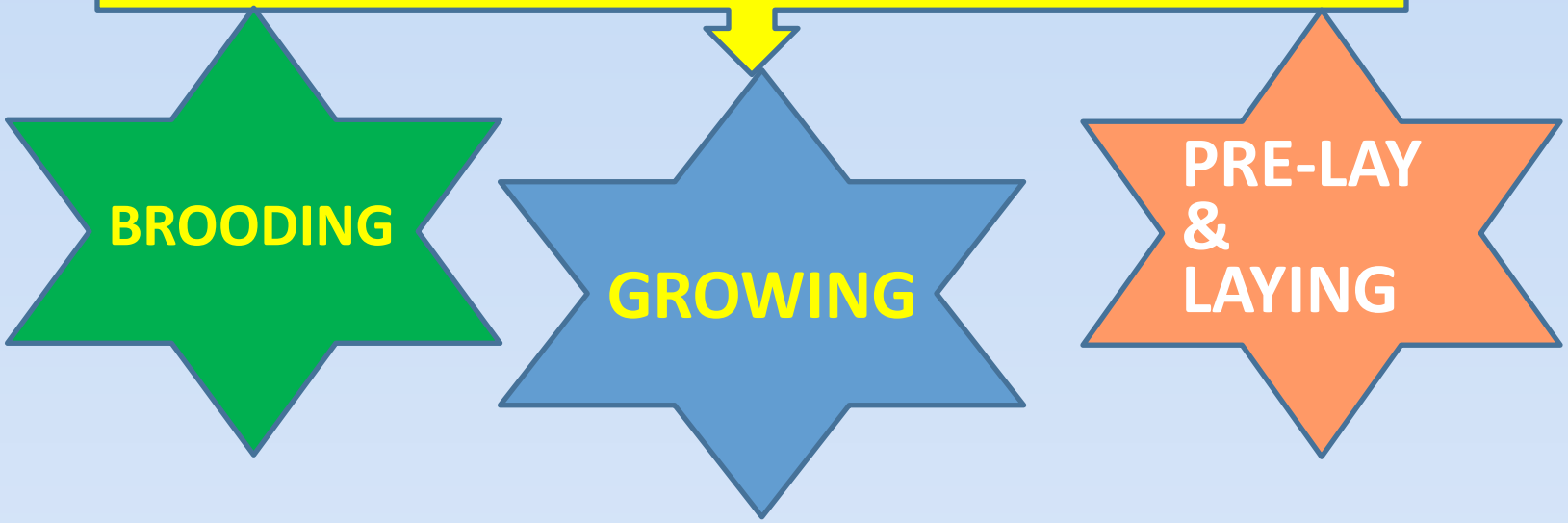
Required **VENTILATION**

SO

ATTAINS REQUIRED GROWTH & BODY Weight

SMART FLOCK MANAGEMENT

THREE IMPORTANT STAGES



FEED, RAW MATERIAL ,DRINKING WATER

VACCINE & VACCINATION

DE-BEAKING

SANITATION HYGIENE & BIO-SECURITY

BEFORE BROODING-SHED PREPARATION

Shed Cleaning and Disinfection Process

Flock transfer or Liquidation

CLEANING of old LITTER materials as immediate

Cleaning and disinfection- poultry house & equipment

ACTIVITY	DETAILS

A. Wet Cleaning

Wash inside of house with Cleaner.	UBC@ 4 ml/ ltr
Wash down curtains properly.	UBC@ 2 ml/ ltr.
Pipelines ,Equipment	Aquamax@ 50 ml/ ltr.

Descaling, cleaning and disinfection of pipeline (100 ft. pipeline length) 5% Aquamax. Give 12 hours of contact period.

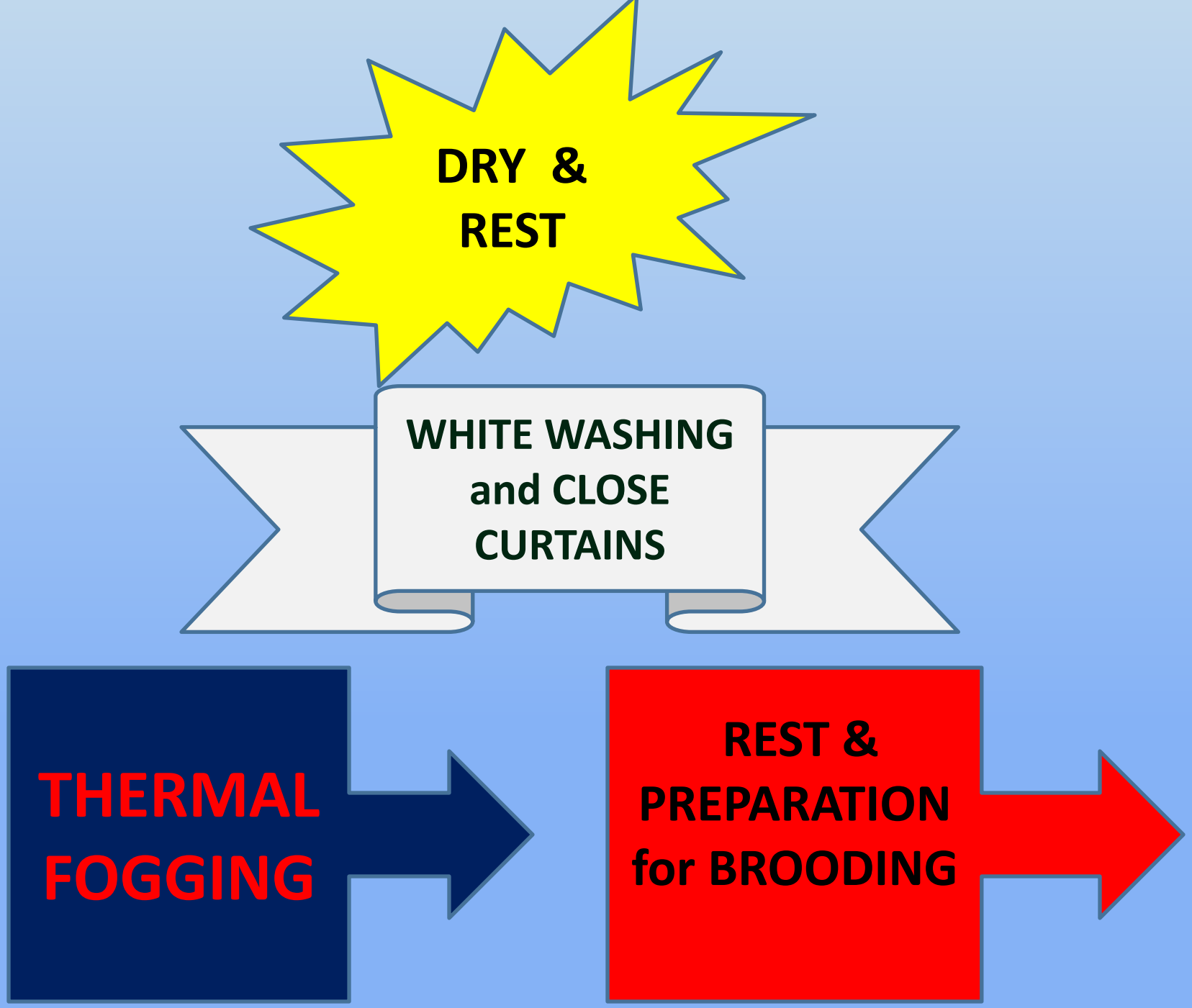
Pipeline Diameter (inch) –o.50/0.75/1.00

Aquamax (ml)- 250/500/750

Water (liter)- 5 / 10 / 15

Cleaning of Sheds (Brooding, Growing and Laying):

ACTIVITY	DETAILS
B. Dry Cleaning	
LITTER dispose - outside	Manual/machine
Insecticide Spray inside shed	Butox @ 2 ml/ ltr. Or Malathion50% @ 6ml /lit
Shed repairs if any (Curtain/Pipe repairing/ Nipple replacement/ Electricity/ Floor levelling/ Mesh repairing etc.)	Maintenance
Cleanig of shed surroundings (Minimum 10 ft. around)	After grooming the area spray VBFA-400 @ 5 ml/ ltr.
Remove detachable equipment.	Drinkers/ feeders


DRY &
REST
WHITE WASHING
and CLOSE
CURTAINS
THERMAL
FOGGING
REST &
PREPARATION
for BROODING

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PROPER WHITE WASHING
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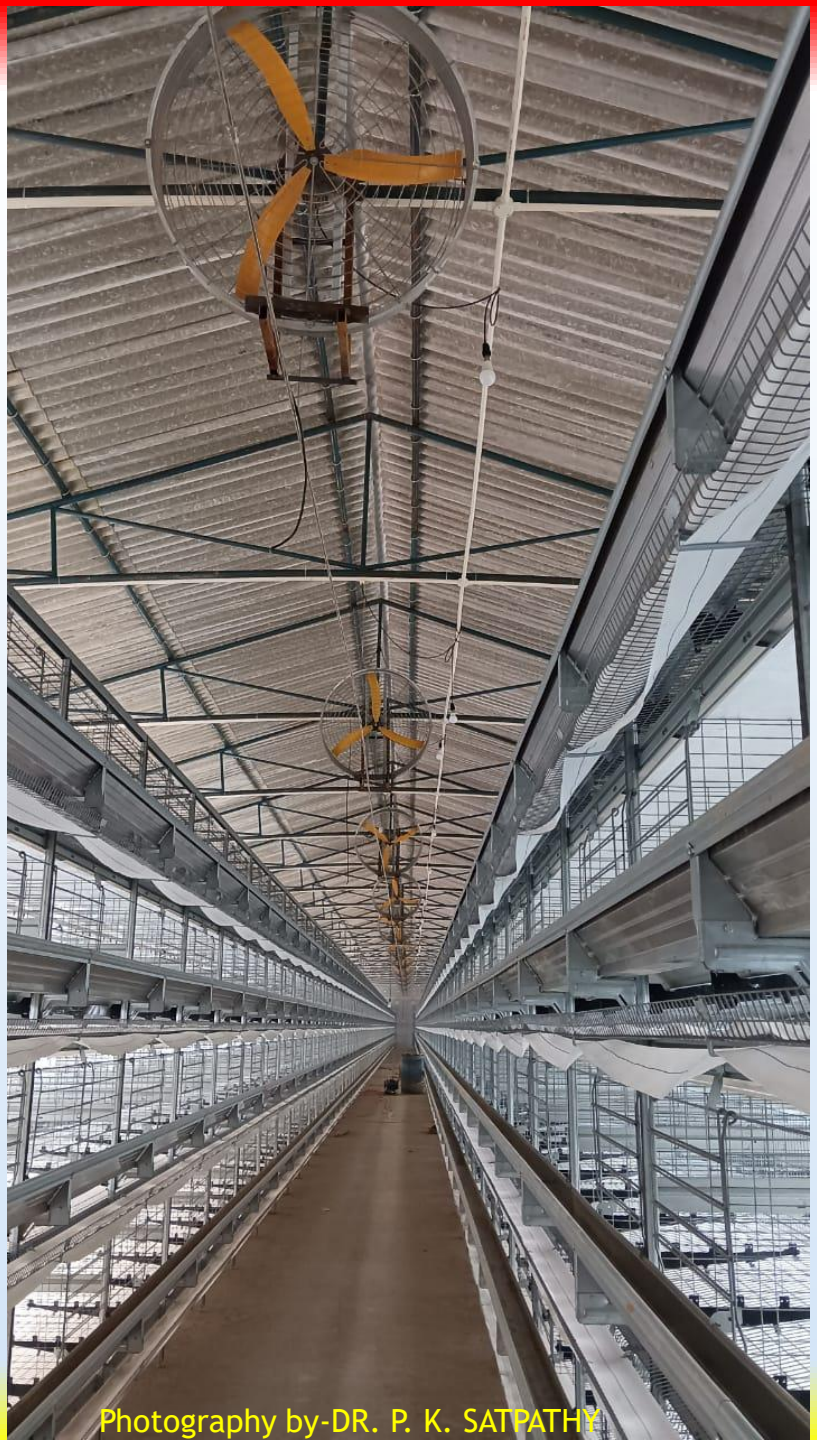
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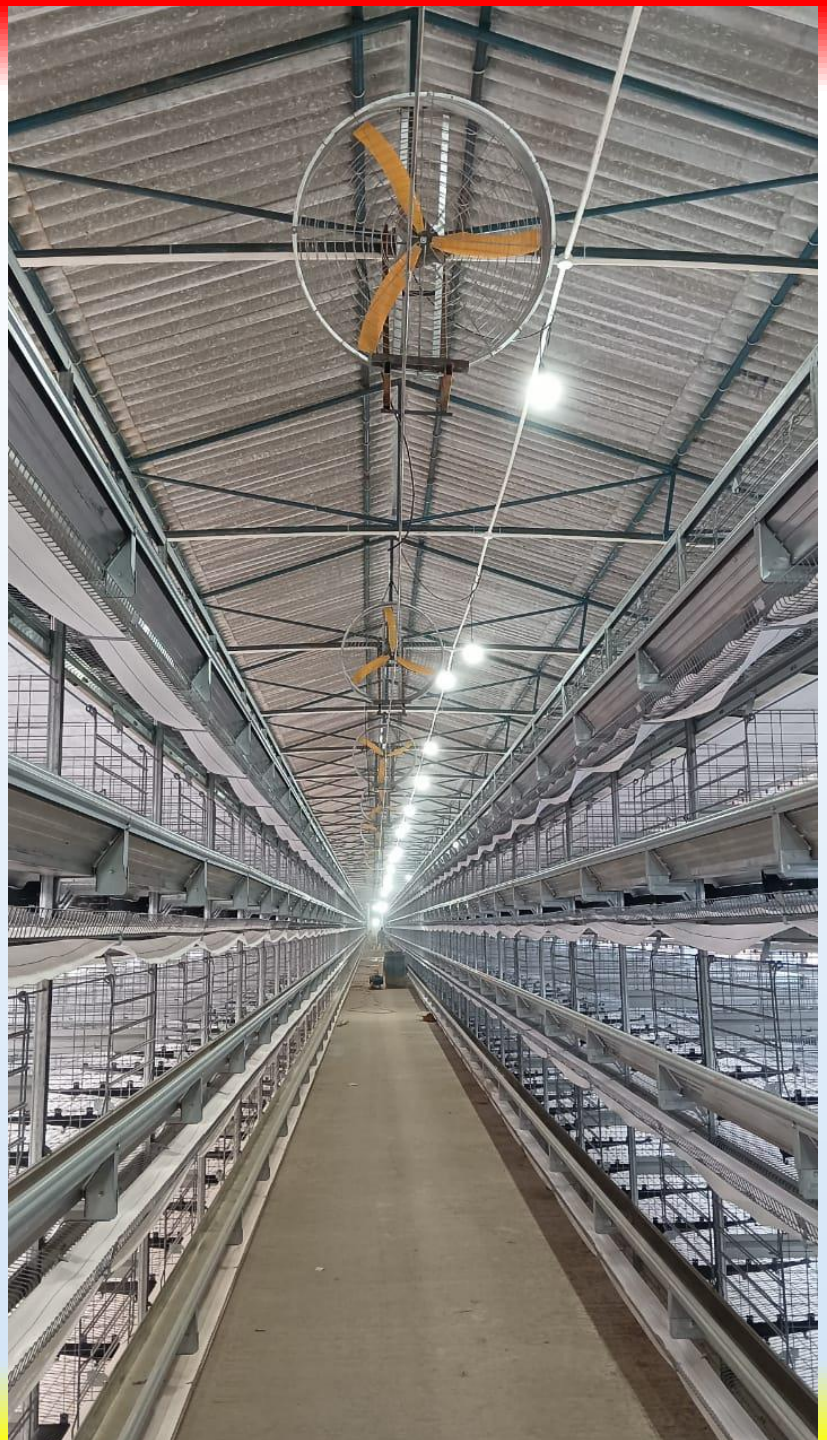

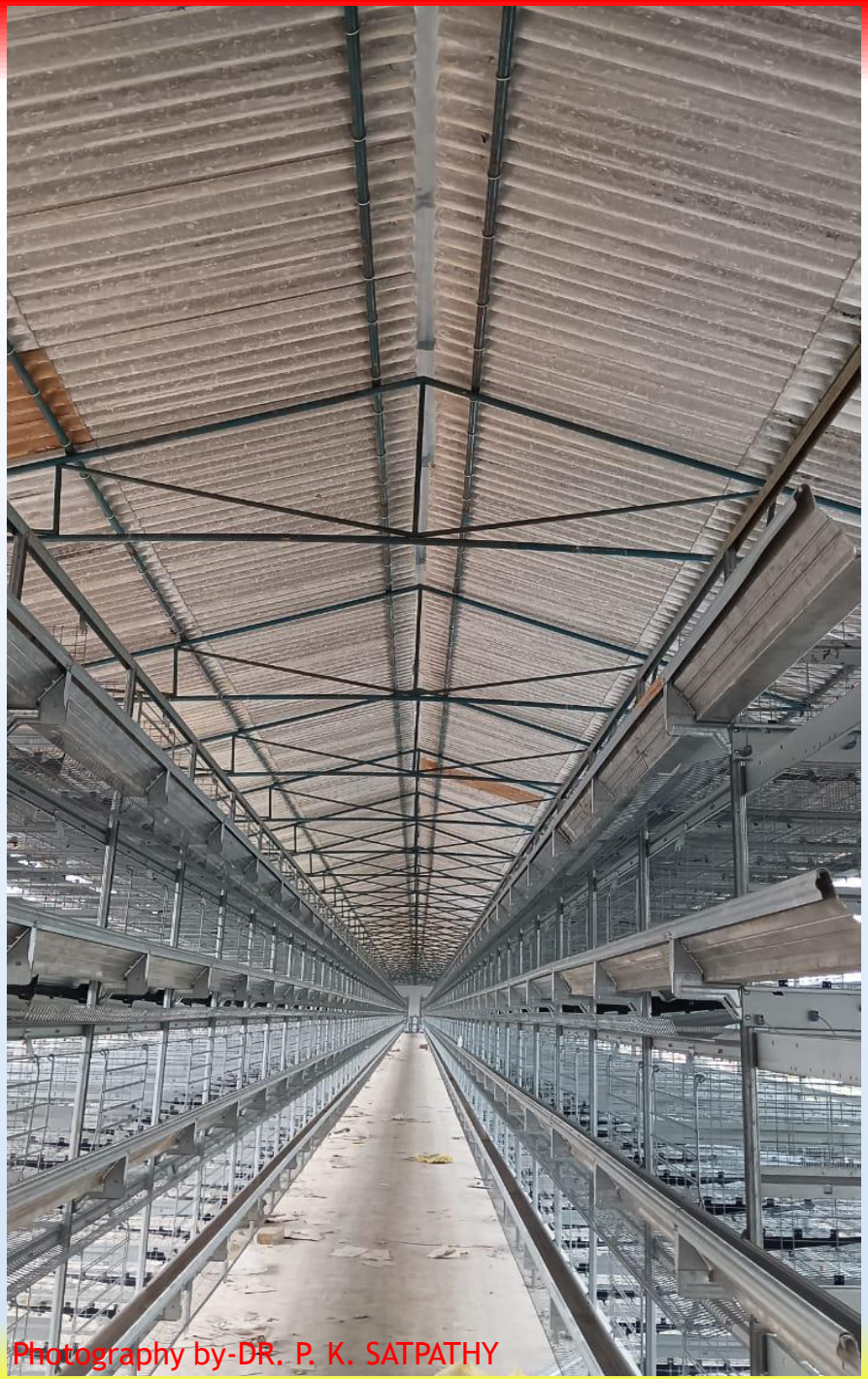

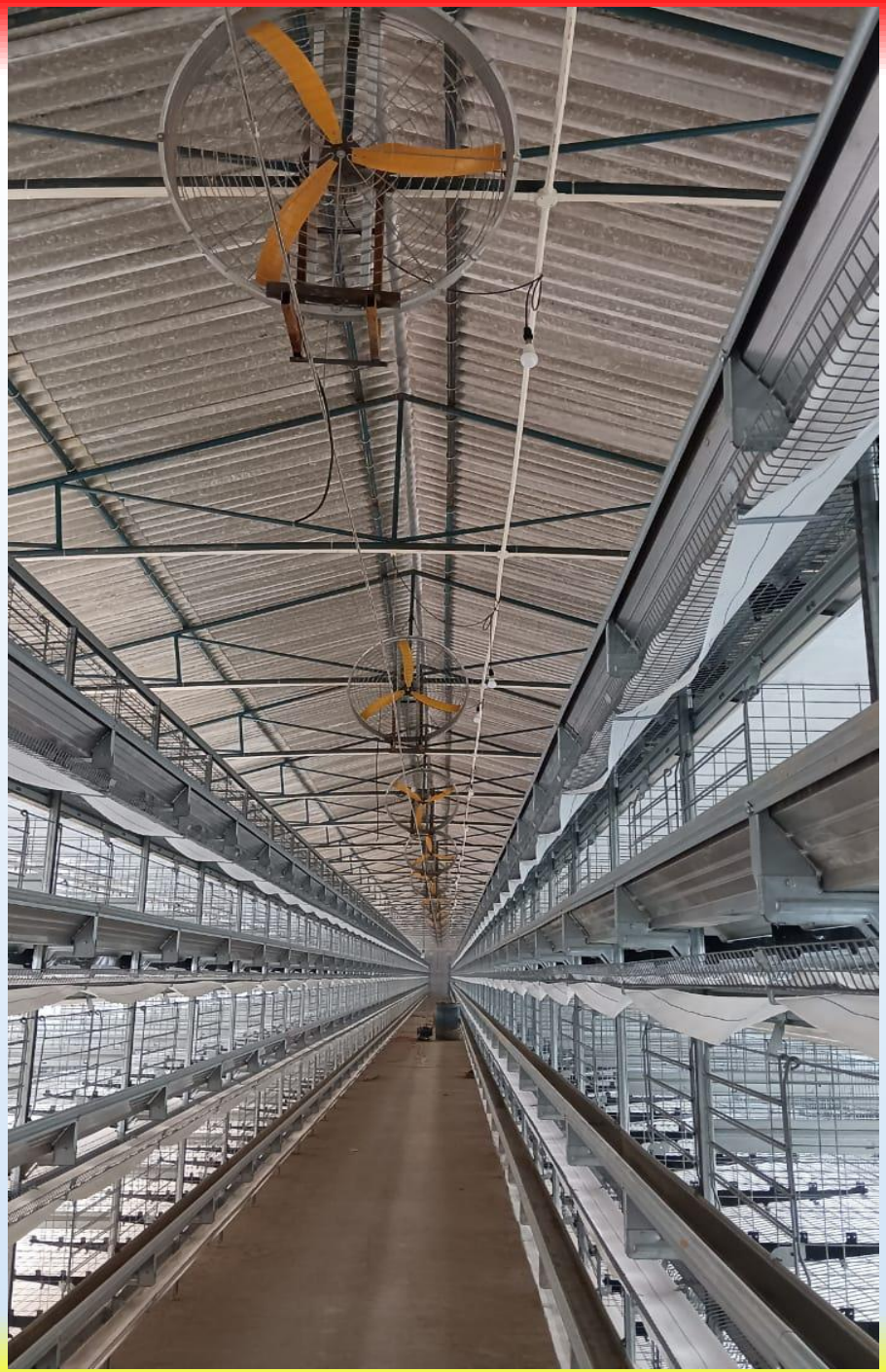

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CLEAN COOLPADS –BATTERY CAGE SHED

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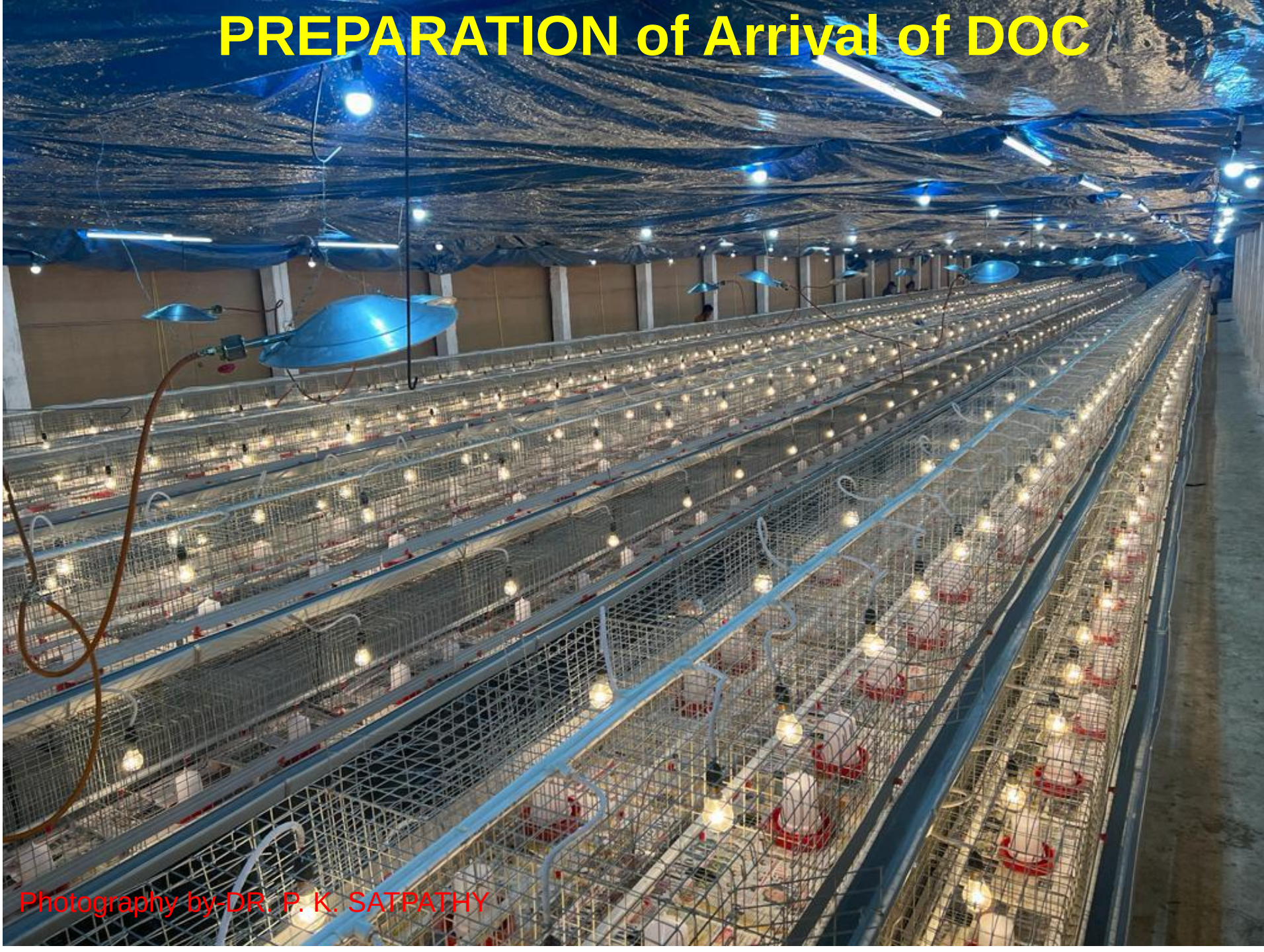
PREPARATION of Arrival of DOC



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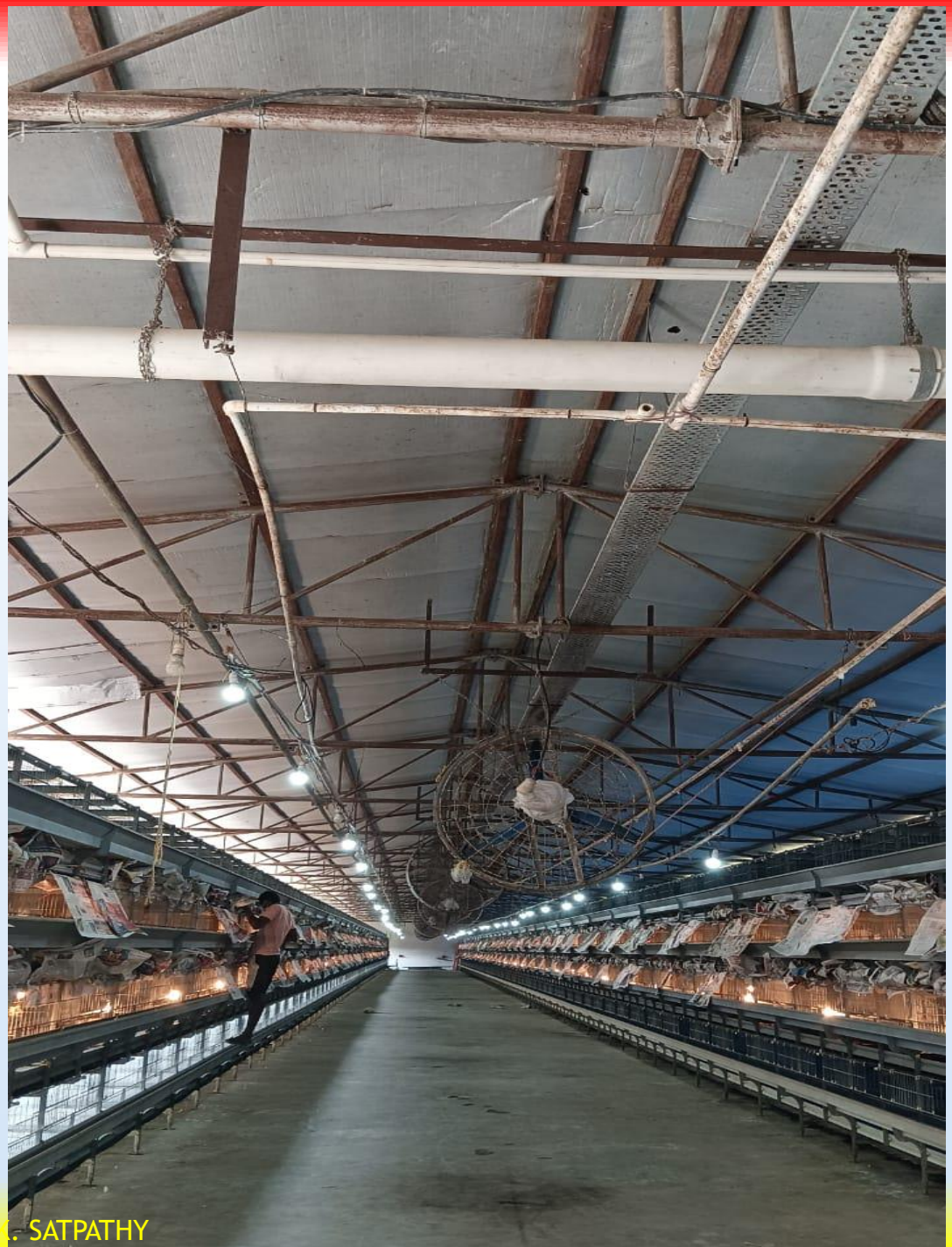

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Importance of BROODING Period

It BUILDS

- DIGESTIVE SYSTEMS
- IMMUNE SYSTEMS
- CIRCULATORY SYSTEMS
- ORGANS DEVELOPMENT
- SKELETAL SYSTEMS
- FEATHERS Development

BROODING

BROODING TEMPERATURE- **Very Very Crucial**

as CHICK'S body THERMO-REGULATORY takes 12 to 14 days to be Functional.

- Should be -1st wk--- 91°--95°F (33—35°C)
  2nd wk--- 85°--90°F (30---32°C)
  3rd wk--- 84°--86°F (29—30°C)
  4th wk--- 80°--82°F (28—29°C)

- **WHOLE HOUSE HEATING required.**

- **Methods- ELECTRIC BULB**

  ROOM HEATERS

  GAS BROODERS (3-4Ft height above the Cage)

- **Relative Humidity(Rh)–** Idal - 60% - 70%
- **Low Rh cause dehydration in chicks**
- **If GAS BROODERS –Spray Sanitized Water.**

- **Ventilation**– Provide easy AIR EXCHANGE
- ELIMINATE--- **CO2 gas**
- **AMMONIA Gas**

- Give SPACE in side CURTAINS

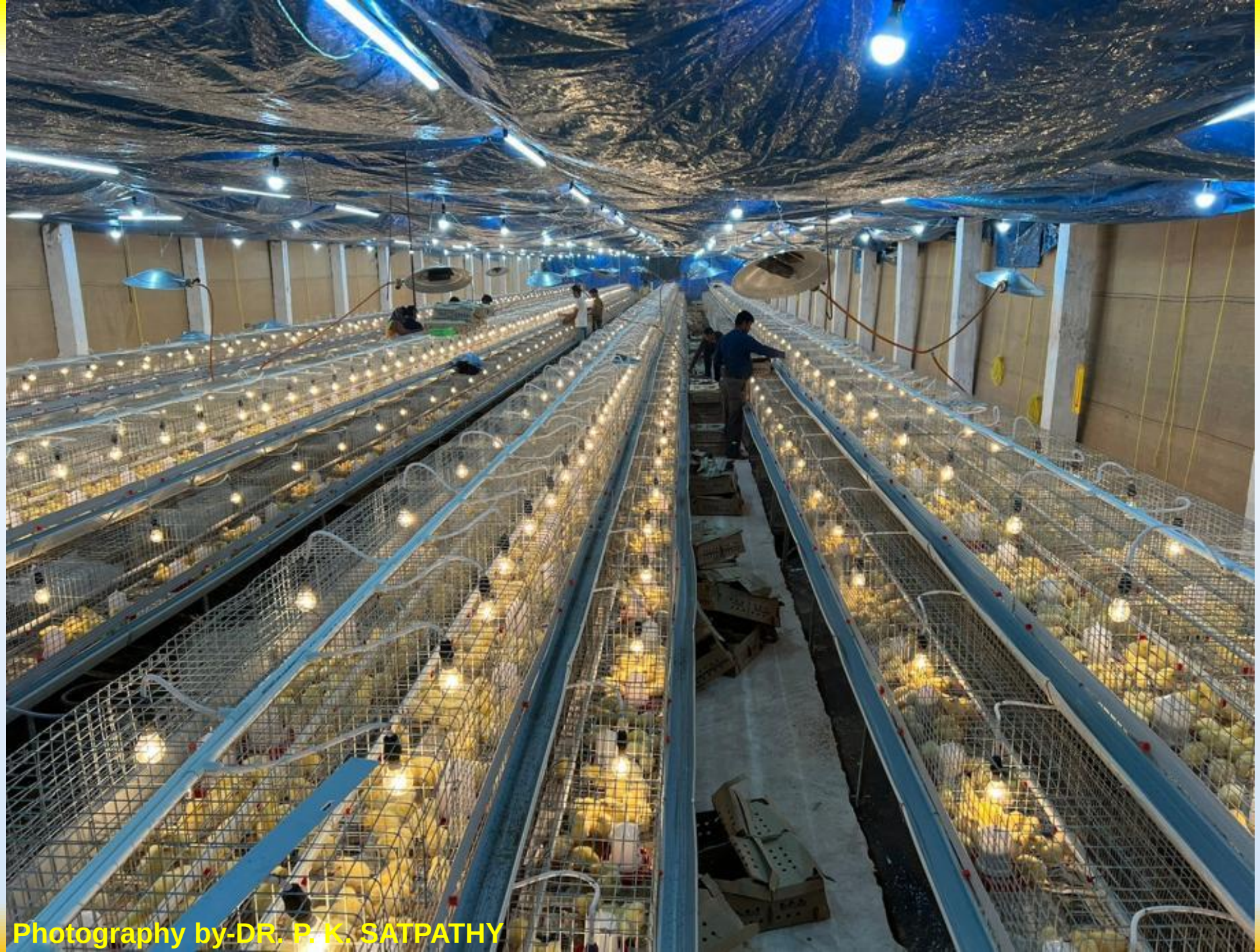
- B-PROPER SPACE
- - Avoid **Over crowding.**

Cage size	- Floor Space	- Feeder space
CHICKS –18 x18 x15 inches (8 chicks/cage)	40.5 sq. inch	2.25 linear inch
GROWER–20 x15 x17.5inches (5 birds /cage)	60.7 sq.inch	4.00 linear inch

This Space is very important for the stages to achieve

To receive PROPER SUGESTED FEED ,WATER ,ADDITIVES

Achieve DESIRABLE GROWTH & BODY WEIGHT.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FEEDING PRACTICE –*(Brooding Period)*

i.e Crop fill

-A successful tips -chick start is **Crop fill.**

- **Crop i.e Food storage part should get FULL immediately after CHICKS are placed.**
- Target >95% chicks -CROP FILL –24Hrs

Advantage--

-Early uniform body wt. as per the target.

- **Too HIGH** OR **too LOW** **Temperature** affects. **Crop fill**

FEEDING PRACTICE--------

FEEDING should be ADLIBIDUM

- **FEED must be Balanced as per Dig.Amino-Acid recommendations Mash or Crumbles.**
- Use of **Crumble feed** at least 4-6 wks of age.

Advantages

Consumption of desirable **NUTRITION**

- To attain desirable **BODY WEIGHT**
- **Chiks– 400 gms (6th wks) 580gms(8th wks)**
- **Pullet– (Grower & Developer) 1050 gms (15th wks)**
- **Laying- 1240gms (18th wks)**
- To attain desirable **IMMUNITY, reduce Disease Risk**
- **Increase LIVABILITY % (** Reduce early mortality)

LIGHTING PROGRAMME

LIGHT INTENSITY

BROODING PERIOD---Higher LIGHT Intensity (30 to 40 Lux)

Helps the chicks to see their sorrounding better,encourages activity like Feeding,Drinking

GROWER & LAYING PERIOD --Lower LIGHT Intensity (10 to 20 Lux)

Creates

CALM Environment

Reduces Stress

Minimize Aggression

HOW MANY Managers Review this?

Lighting programme

Age in weeks	Total Light (Hours)
1	24:00-22:00
2	20:00
3	20:00
4	20:00
5	20:00
6	20:00
7	20:00
8TH WEEKS onwards	**NO ARTIFICIAL LIGHT**

-4-hour dark period between 7:30 PM and 11:30 PM.

-Dark period is essential to give the chicks a chance to **rest.**

Higher LIGHT INTENSITY ---------- 30- 40 Lux

Beak TRIMMING/ DE-BEAKING

- A Critical & importan operation at 10^{th} /11^{th} day.

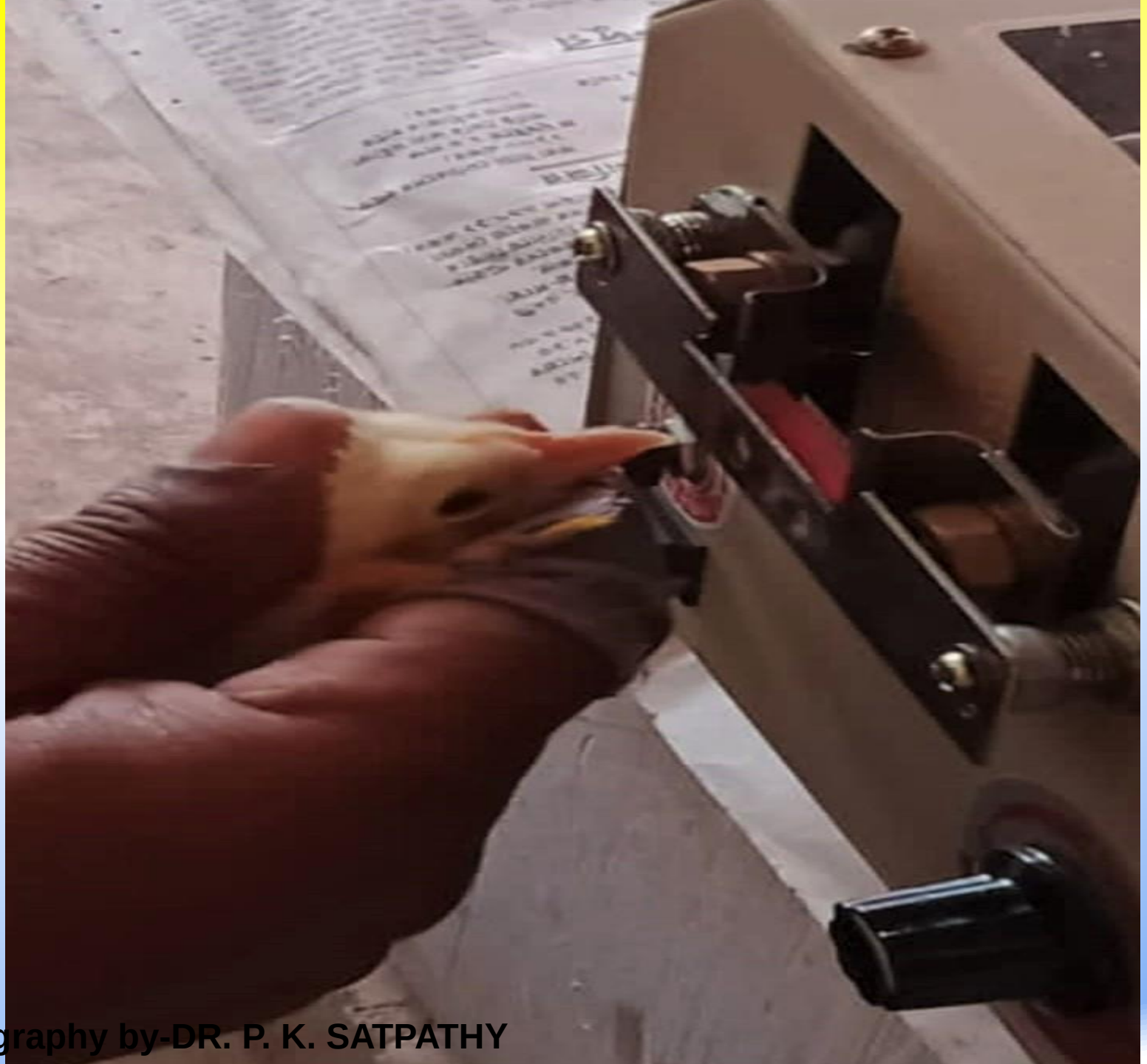
- **Should be carried out by well trained,skilled operators.**

The beak trimming reduces:

- **Feed wastage**
- **Feather pulling**
- **Cannibalism / pecking**

IF 1^{st} De-beaking is properly done reduces the chance of the 2^{nd} .

FAULTY De-Beaking – Affects FEED intake, Growth, EGG PRODUCTIONS at LAYING period.



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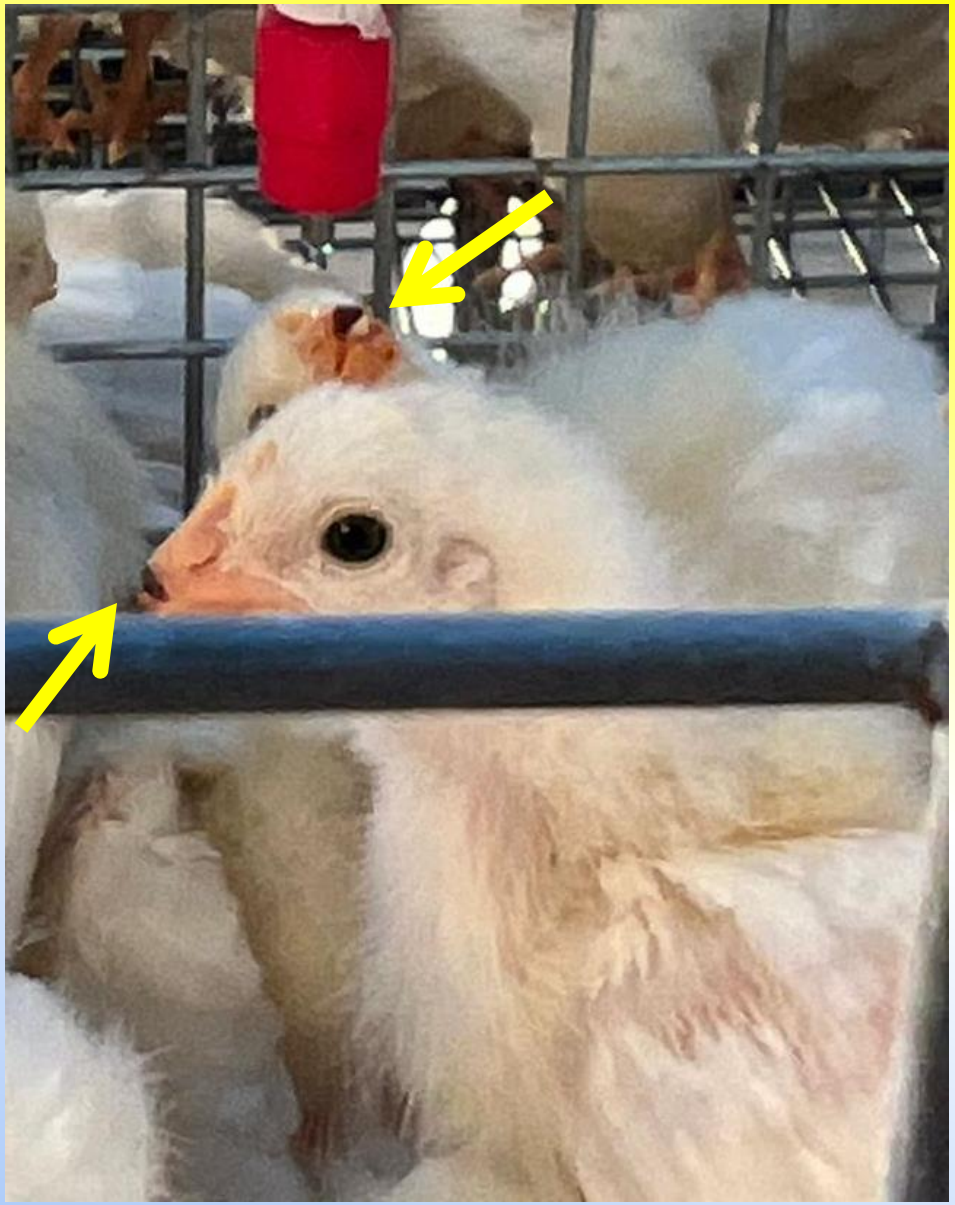
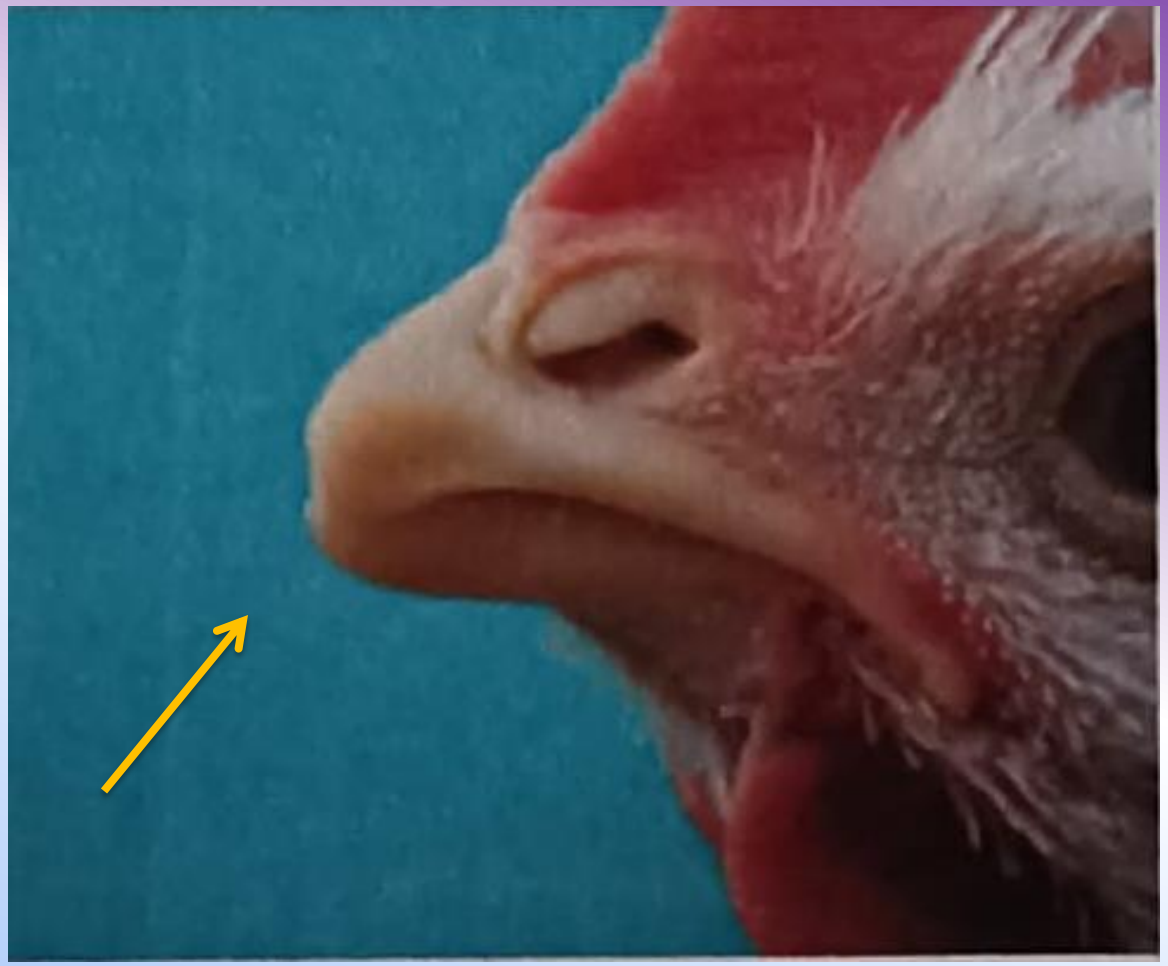


10-11 days old chick just after beak trim (single beak trimming/de-beaking)



Appearance of beak at 18 weeks of age.

GOOD DE-BEAKING

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IMPORTANCE of proper REARING

- **To attain Target BODY Weight on each WEEK**
- CRUCIAL for development of **Skeletal structure**.
- **Skeletal system plays major role in maintaining EGG Shell quality for entire LAYING Period.**
- Medullary bones, Ribs, shoulder bones,
- Fumer, Tibia & Ulna stores huge CALCIUM, helps in **Egg-Shell formation during night**.

PRE-LAY DIET

-Extremely important & **observed many farmers skip.**

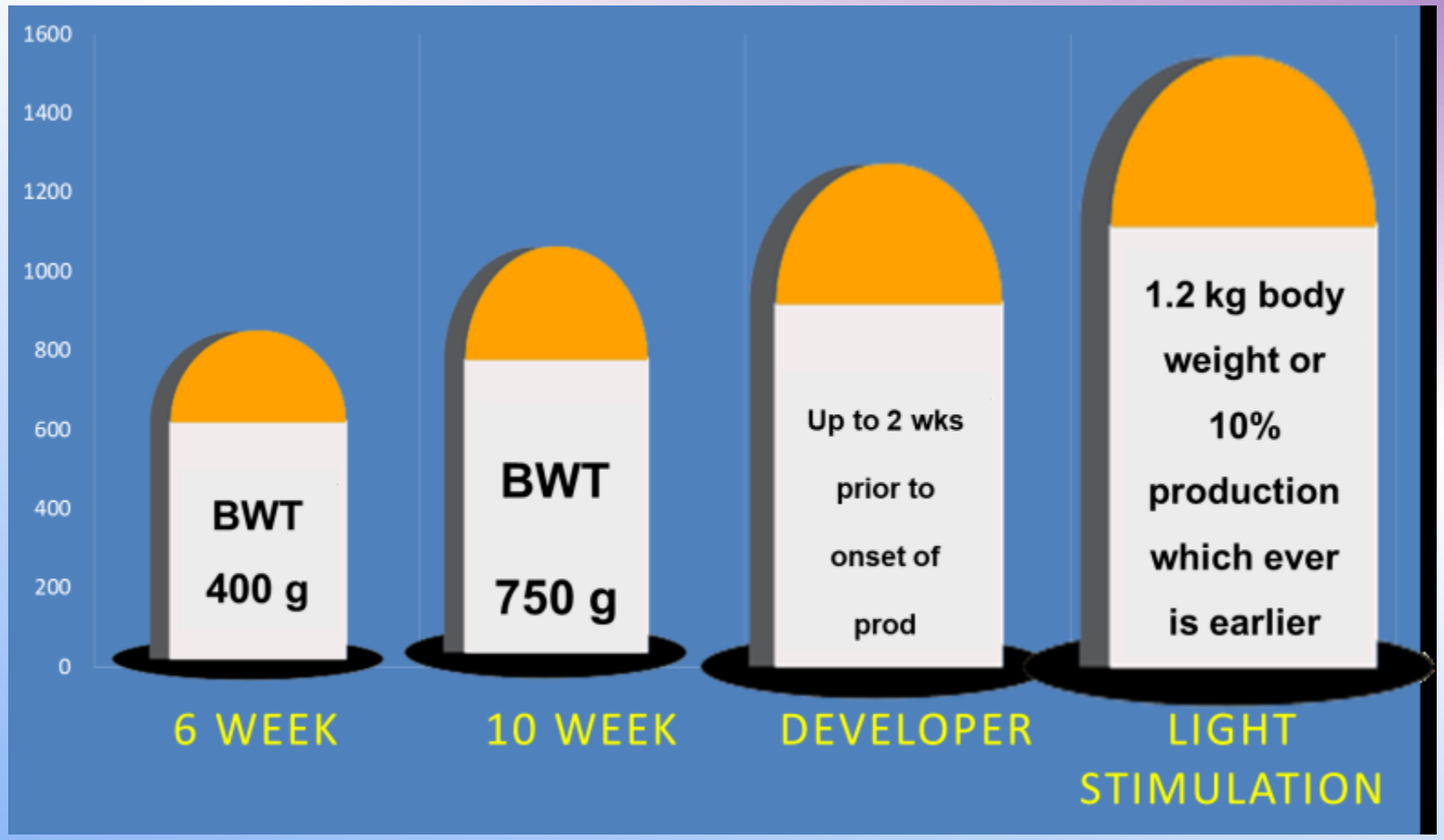
-Should start 14 to15 days before onset of production as Comb, wattles developed.

-This Diet helps establish Medullary Bone

Rearing period Nutrient Level Recommendations

Feeding phases		Chick	Grower	Developer	Prelay*
Feed up to		400g body weight	750g body weight	10 days before onset of production	0.5% daily egg production
Nutrient	Units				
Metabolizable Energy (min)	Kcal/kg	2900	2850	2700	2700
Crude Protein	%	20.50	18.50	16.50	17.00
Crude Fiber	%	3.50	4.0 – 5.0	5.0 – 6.0	4.5 – 5.5
Ether extract	%	3.5 – 5.5	3.0 – 4.5	3.0 – 4.0	3.0 – 4.5
Total Lysine	%	1.12	1.00	0.80	0.84
Total Methionine	%	0.54	0.48	0.41	0.44
Total Methionine + Cysteine	%	0.85	0.78	0.70	0.73
Total Threonine	%	0.79	0.71	0.62	0.63
Total Tryptophan	%	0.24	0.22	0.20	0.20
Total Arginine	%	1.30	1.20	1.05	1.08
Total Isoleucine	%	0.83	0.75	0.64	0.66
Total Valine	%	0.92	0.85	0.78	0.78

Body weight milestones




Black curtain-GROWER SHED
REDUCES FLIGHINESS, Low Disturbance
In Summer Prevent Early MATURITY
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MANAGEMENT - GROWING PERIOD

CHICKS Shifting to Grower by 7thwks.

ERROR-- Delay in shifting many Farms.

Feed –Mash type OR Crumbles (Dig.A.A. basis)

Growing Body wt.- MONITOR through out growing period.,8th , 12th wks.

Grading – usually 2-3 Grades.

-- Lower grades to segregation & separation.
-- Support Nutrition & supplements.
-- Efforts to keep +30 to +50gms above the Std. b.wt.

MANAGEMENT--DEVELOPING & PRE-LAYING STAGES

Keep Notice and DON'T do—

- birds disturbance
- Late vaccination,
- Late shifting to Layer cages
- Late grading (usual practices observed at many farms-- This affect the Production later

And DO

- ✓ **HOUSING max. by 16th wks. age.**
- ✓ **Transportation and shifting if**
- ✓ **Selective De-beaking**
- ✓ **Injectable Vaccinations during Night time.**
- ✓ **Pre-lay feed start by 16th wks & as recommended dig. A.A.**
- ✓ **Total light hrs - 16 hrs & not to get disturbed.**

PRE-LAY FEEDING is most IMPORTANT STAGE IN POULTRY FARMING. Due to management ERRORS, many farms forced to SKIP this PRE-LAY Feed , suffers PRODUCTION.

ALERTNESS during GROWING,DEVELOPING Period

- **Birds seen highly Sensible to -Abnormal Sound , and Flightiness observed, so,**

- **-Restrict Man, material movement into the shed.**
- **-Sensible to Bright colours & un-precedent events.**

- **-Control measures – Least disturbances.**
  single time feeding.

- **-Active operations during late evening hrs.**
  (Grading,2nd Debeaking, Killed vaccination, etc.)

ALERTNESS during GROWING Period

ADVISED to keep +50gms above the Std.b.wt.

Growing b. wt. relates very much towards attaining Uniformity, sexual maturity in the flock & to achieved, peak & better production.

Uniformaity –

$$\frac{\text{No.of birds within range of } \pm 10\% \text{ of the mean wt}}{\text{Total birds weighed}} \times 100$$

ALERTNESS during GROWING Period	Uniformity rating
85% and over	Excellent
80 – 85 %	Very Good
75 – 80 %	Fair
Less than 70%	Not Satisfactory

LIGHTING PROGRAMME

LIGHTING is CRUSIAL, Influence -Rearing & Laying period.
Significant impact on EGG % and EGG weight.

LIGHT Stimulation--- 17 th wks—COMB ,WATTLES –RED
1st wks—1hr , then 30 minutes week wise.

The fundamental principle of lighting

1. **Avoid increasing the hours of light (photo-period) during the rearing period**
2. **Avoid decreasing the hours of light during the production period.**

Mid-night lighting is exception to the above rule.

PRE- LAY FEED- VERY IMPORTANCE

To STRAT- when COMB & WATLES enlarge and turns red.

Transition from low-calcium, low-nutrient-density

Pre-lay feed helps in

Developer feed for high-calcium, high-nutrient-level diet.

PRE-LAY DIET contains 2.2 CALCIUM & to feed up to 0.5%PRODUCTION
This allows RICH CALCIUM deposit in the MEDULLARY BONE of young Layers.

Pre-Lay & Phase Changes Feeding

Use of pre-lay feed improves uniformity among pullets.

- **LAYER PHASE- 1- feed - start when production reaches 0.5% -- start of LAYING PERIOD.**

-- PHASE feeds formulated- Maximum Nutritient

CALCIUM Sources:-

Phases	**Phase I**	**Phase II**	**Phase III**	**Phase IV**
***Fine % (up to 1 mm)**	50	40	30	30
Coarse % (2 to 4 mm)	50	60	70	70

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Start of LAYING Period

- This is a very important stage, the pullets are ready to enter their LAYING CYCLE.
- The Farm MANAGERS & the OWNERS have to keep an close monitoring to their flocks.
- LEAST Disturbances to the birds.
- FEED QUALITY & BALANCE DIET as per guidelines to be maintained.
- To follow recommended LIGHTING PROGRAME

Laying Period

The FEED during the laying period must meet the birds' requirement for

- **Maintenance**
- Production
- Growth

Goals during Laying Period

Achieving high production peaks

Maintaining persistent production over extended periods

Achieving marketable egg size quickly

Controlling egg weight

Promoting immunity for better livability.

Maintaining shell quality

Laying Period

Each PHASE FEEDING is specifically designed to fulfil the requirements for maximum **egg production and optimum egg weight**.

- Body weight,
- Performance
- House temperature
- Feed texture
- Feed Energy level
- **Nutrient imbalances in the diet**

If there is a deficiency in certain nutrients, the hen may try to compensate by increasing feed consumption.

Birds are sensitive to new ingredients, so it is important to gradually introduce any changes.

TARGET : PRODUCTION

Livability%		
19 to 80 weeks	:	93
19 to 100 weeks	:	91
Feed Intake		
0 to 18 weeks	:	5.6 Kg
19 to 80 weeks	:	46.5 Kg
19 to 100 weeks	:	61.2 Kg
Body Weight		
At 16 weeks of age	:	1.10 kg
At 22 weeks of age	:	1.40 kg
At 32 weeks of age	:	1.50 kg
At 100 weeks of age	:	1.57 kg
Sexual Maturity		
Age at 50% rate of lay	:	20 week
Age at 90% rate of lay	:	22 week

Egg Production		
Peak Production	:	98.00%
Egg Production above 90%	:	45 weeks
Total Hen Housed eggs for 72 weeks	:	340
Total Hen Housed eggs for 80 weeks	:	386
Total Hen Housed eggs for 100 weeks	:	490
Egg Weight		
Egg Weight at 22 weeks of age	:	50g
Egg Weight at 26 weeks of age	:	55g
Feed Conversion		
Feed/egg for 19-80 weeks of age	:	121g
Feed/egg for 19-100 weeks of age	:	125g
Egg Characteristics		
Shell quality	:	for extended period
Shell colour	:	Uniform white
Variation in egg size (Uniformity of eggs)	:	Uniform

EGG WEIGHT MONITORING

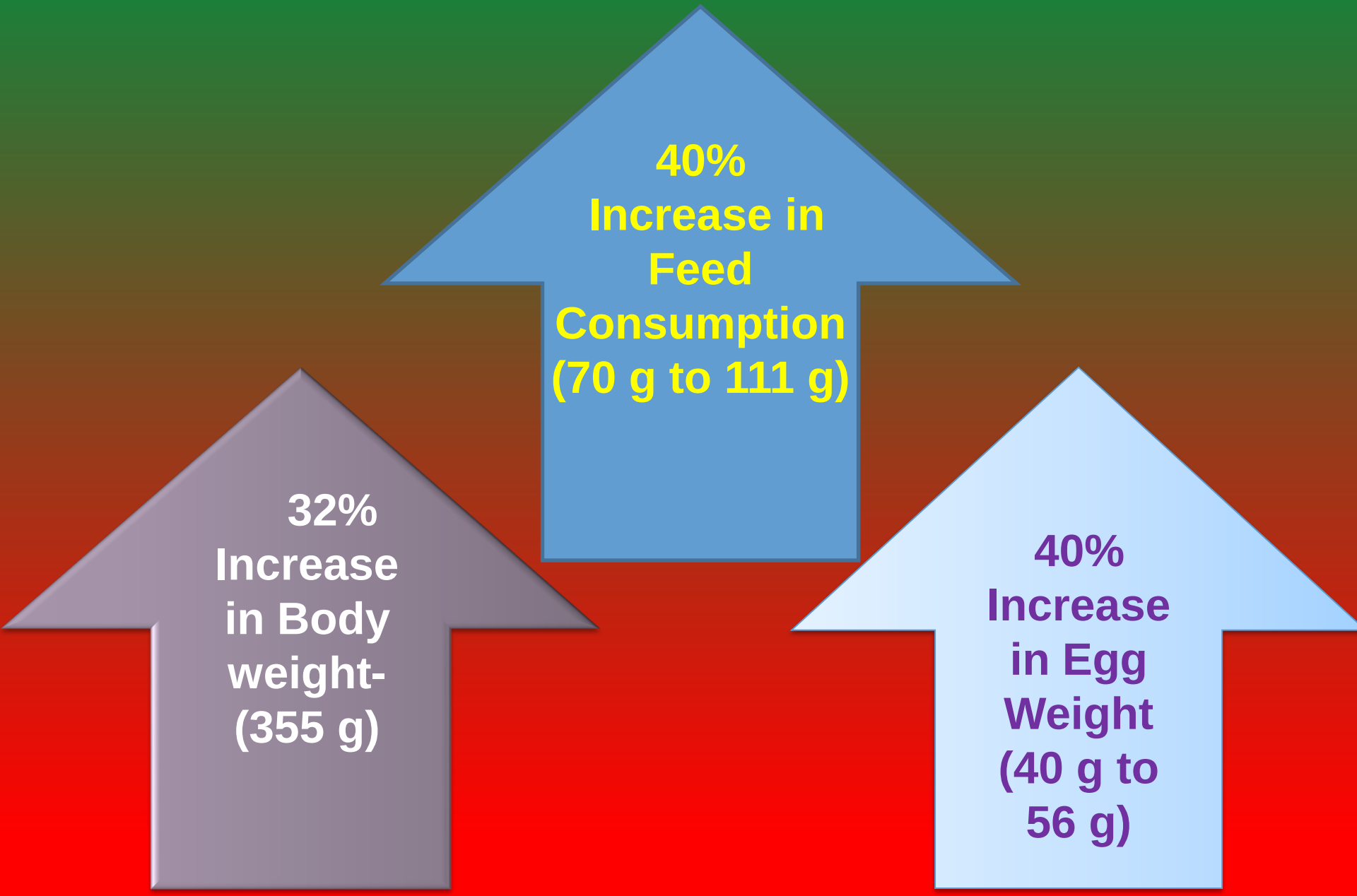
In the first month of production egg weight increase rapidly.

1st month of production → **2.5g per week egg weight increment.**

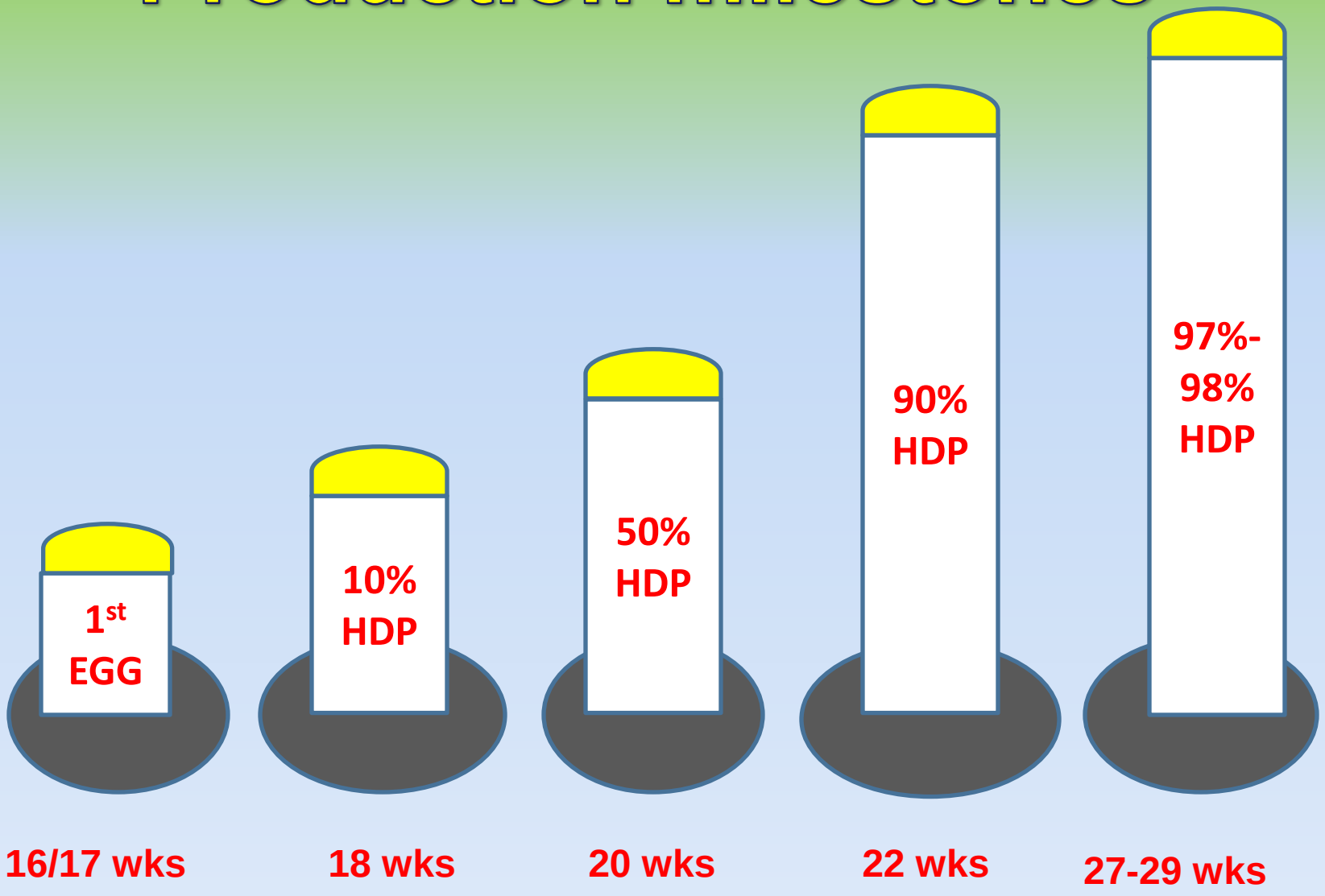
2nd month of production → **1.0g per week egg weight increment**

3rd month of production → **0.5g per week egg weight increment**

Phase-1 (0.5% egg production to 30 weeks)



Production milestones



SUMMER FEEDING

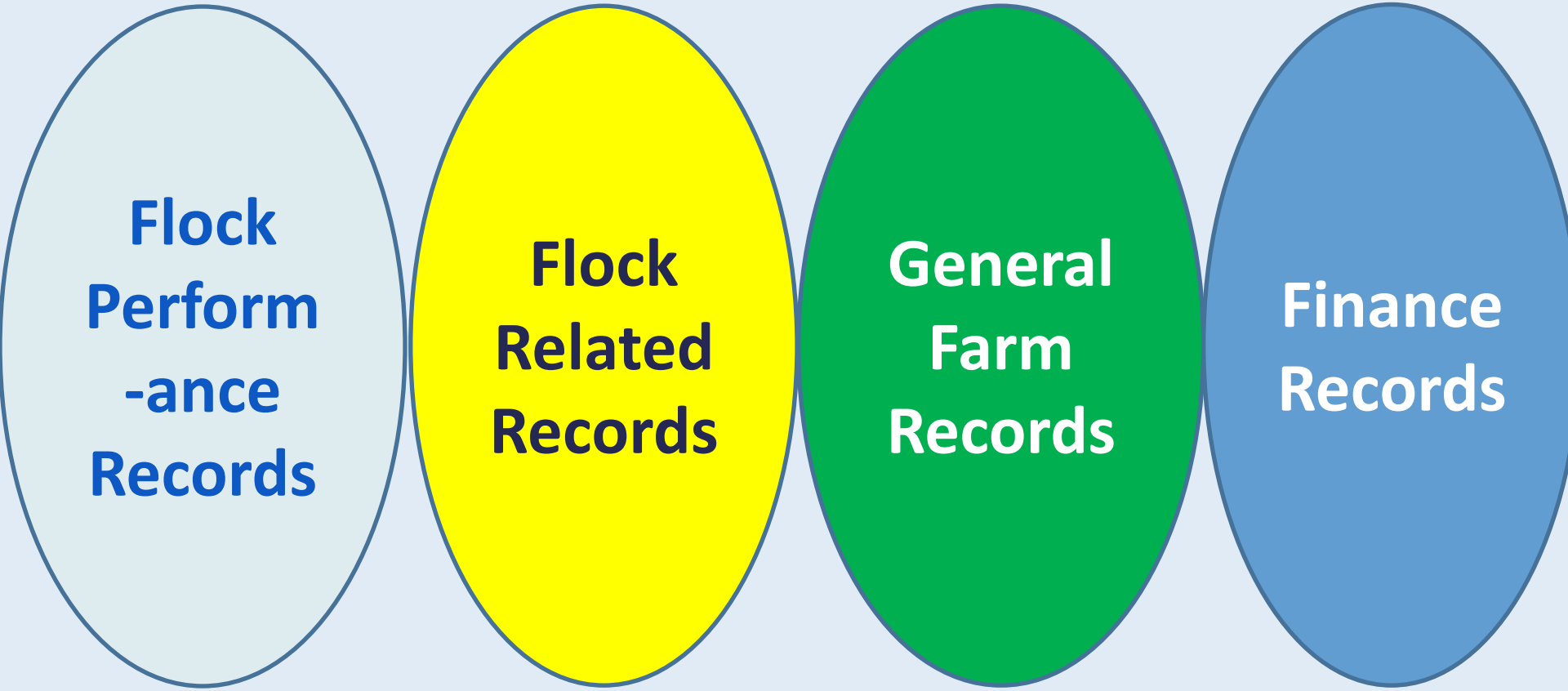
- **Initiate management efforts to increase feed consumption**

- **Frequent feeding.**
- **Early morning feeding.**
- **Provide Massh type feed- Dense feed , if possible use CRUMBLES.**
- **Frequent FRESH water , & frequent FLUSHING**
- **10% Extra VITAMINES, MINERAL & VITAMINE-C supplement**

- **Mid-night light require during Summer Season.**
- **Consumption based nutrient levels to be properly followed**

Type of Records

FARM MANAGER's ACCOUNT's DUTY



Flock Performance Records

Production :

- Hen Day Production (HDP%)
- Hen Housed Production HHP
- Feed consumption(daily, weekly & cumulative)
- Feed efficiency (Feed per egg)
- Mortality(weekly & cumulative)
- Water consumption
- Egg weight
- Body weight

FLOCK RELATED RECORDS

- Medication & vaccination records
- Gas & Electricity consumption records
- Post Mortem & Laboratory records
- Water tank & nipple line cleaning records
- Feed rates
- Eggs rate

General Farm Records

Visitors register

Vehicle register

Supervisor & workers

Diesel consumption

PHOTOGRAPHS OF FEW SMART LAYER MANAGEMENT FARMS WITH GOOD RECORDS

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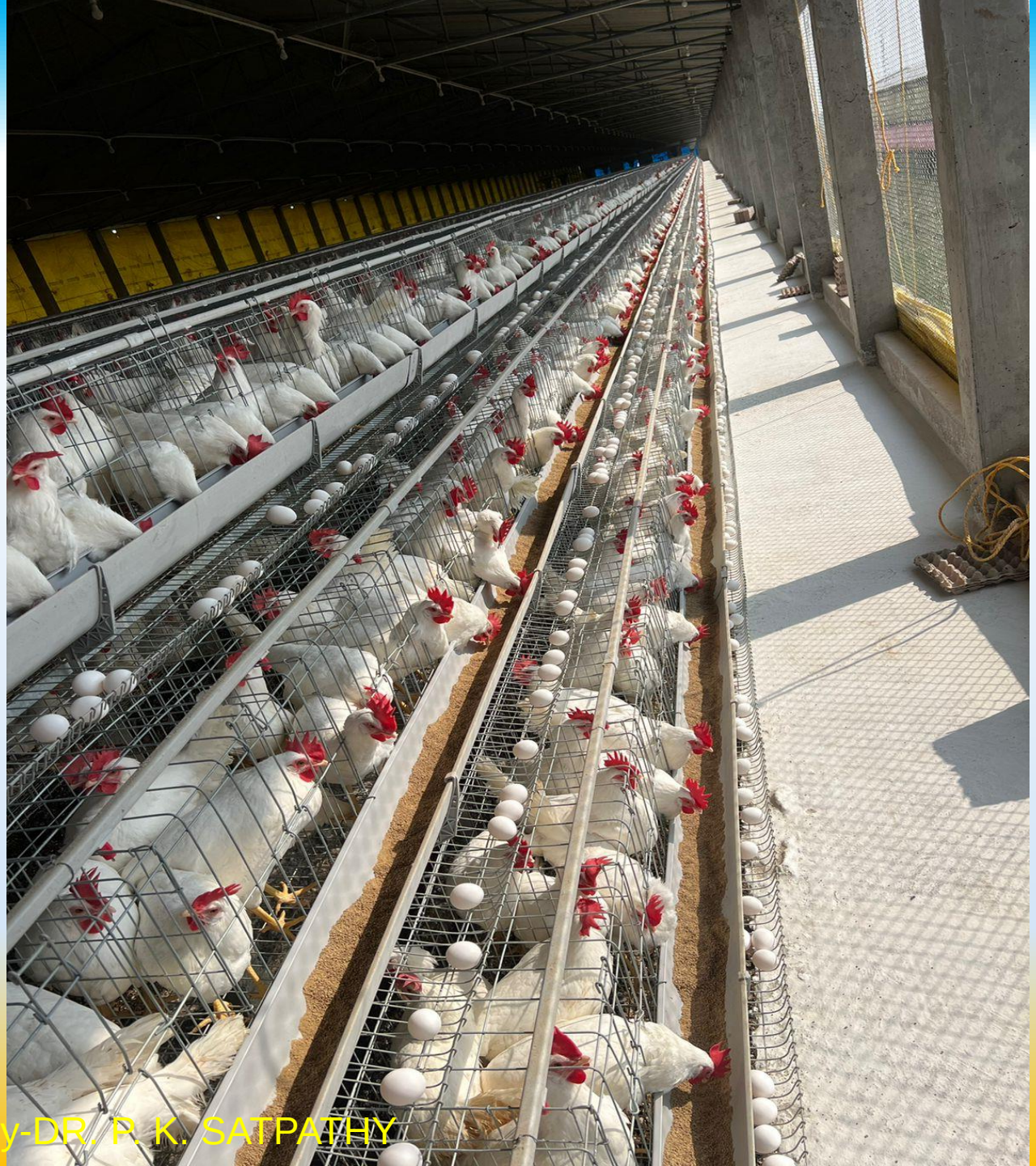

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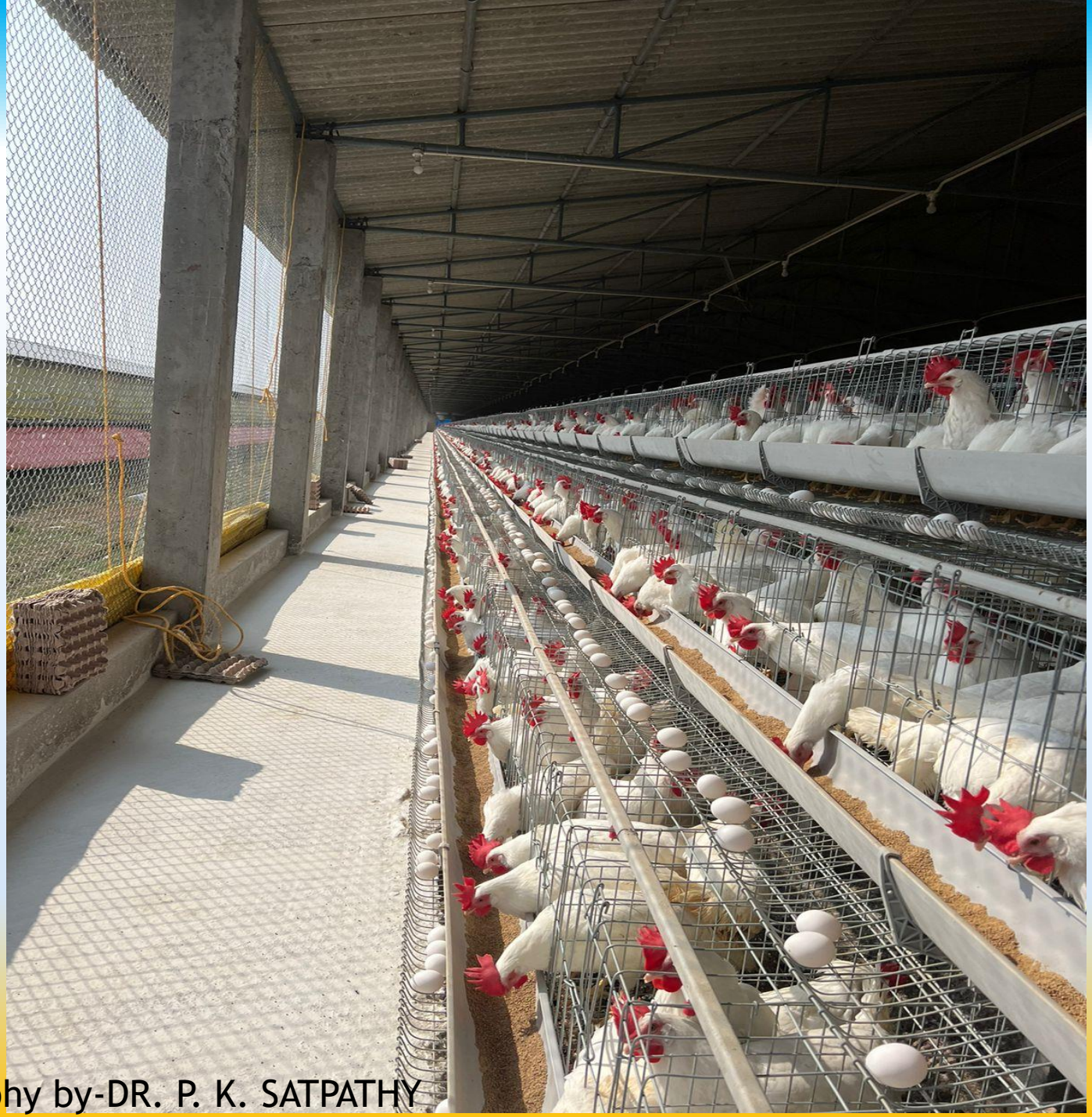

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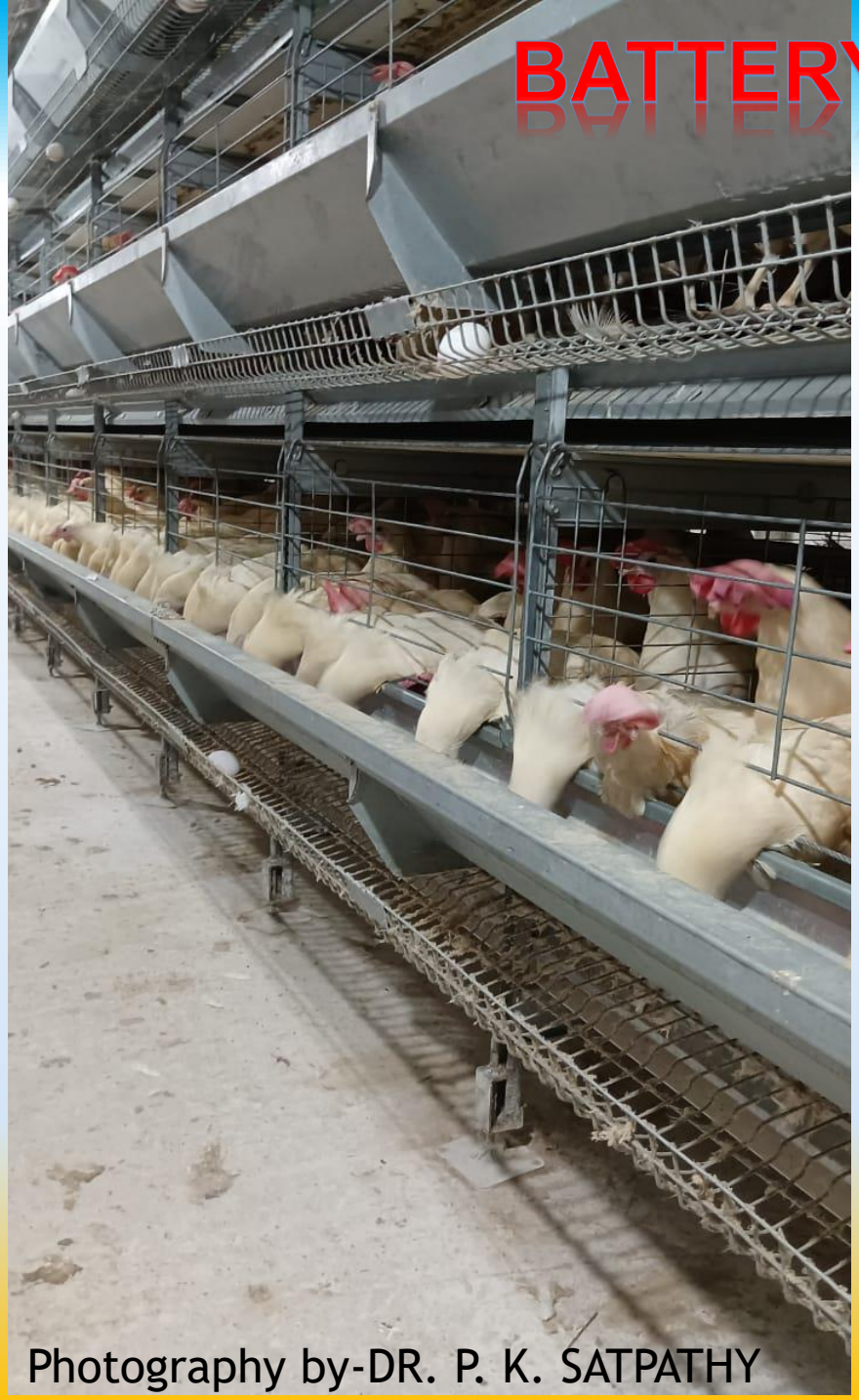
BATTERY CAGE



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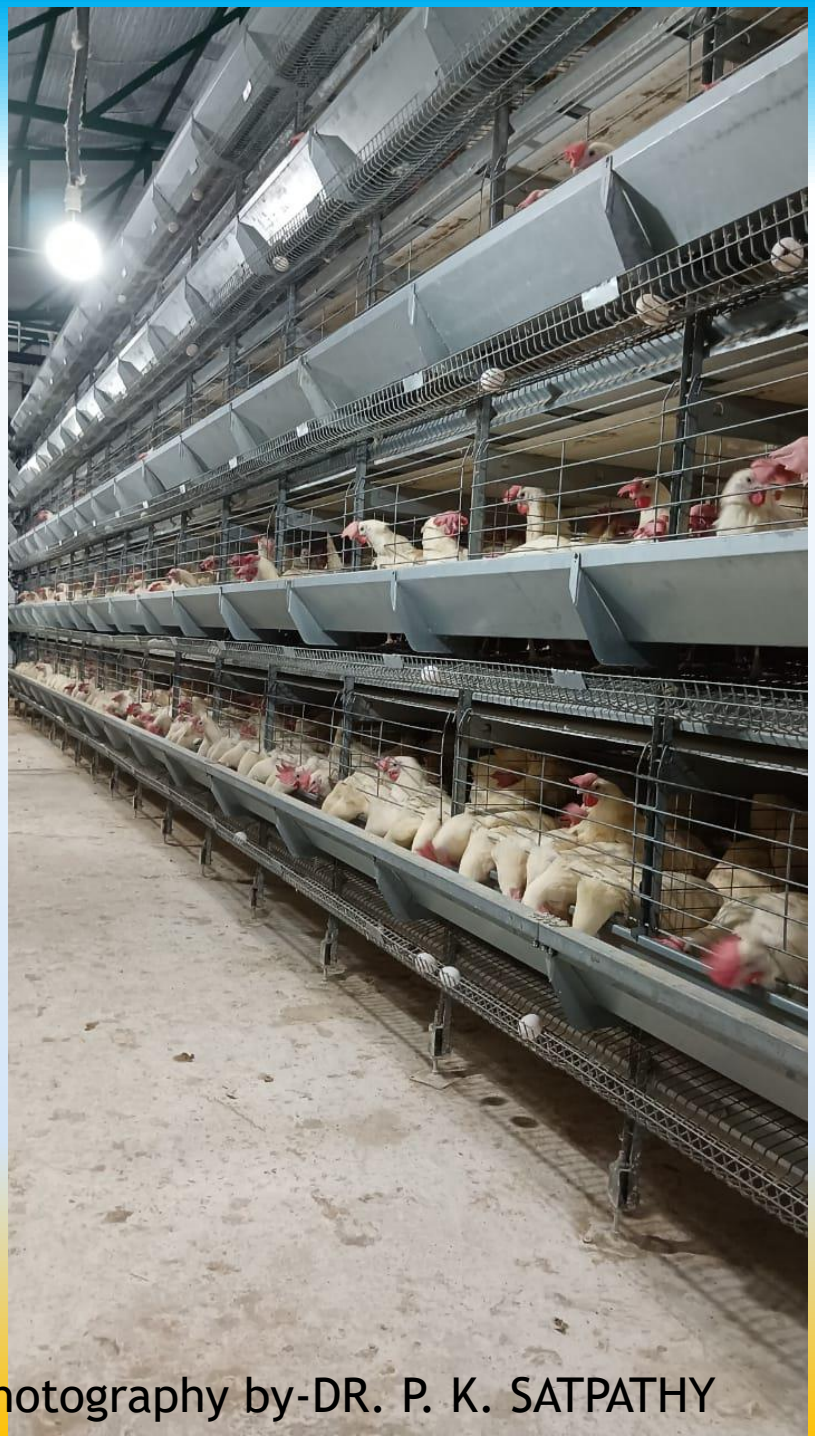

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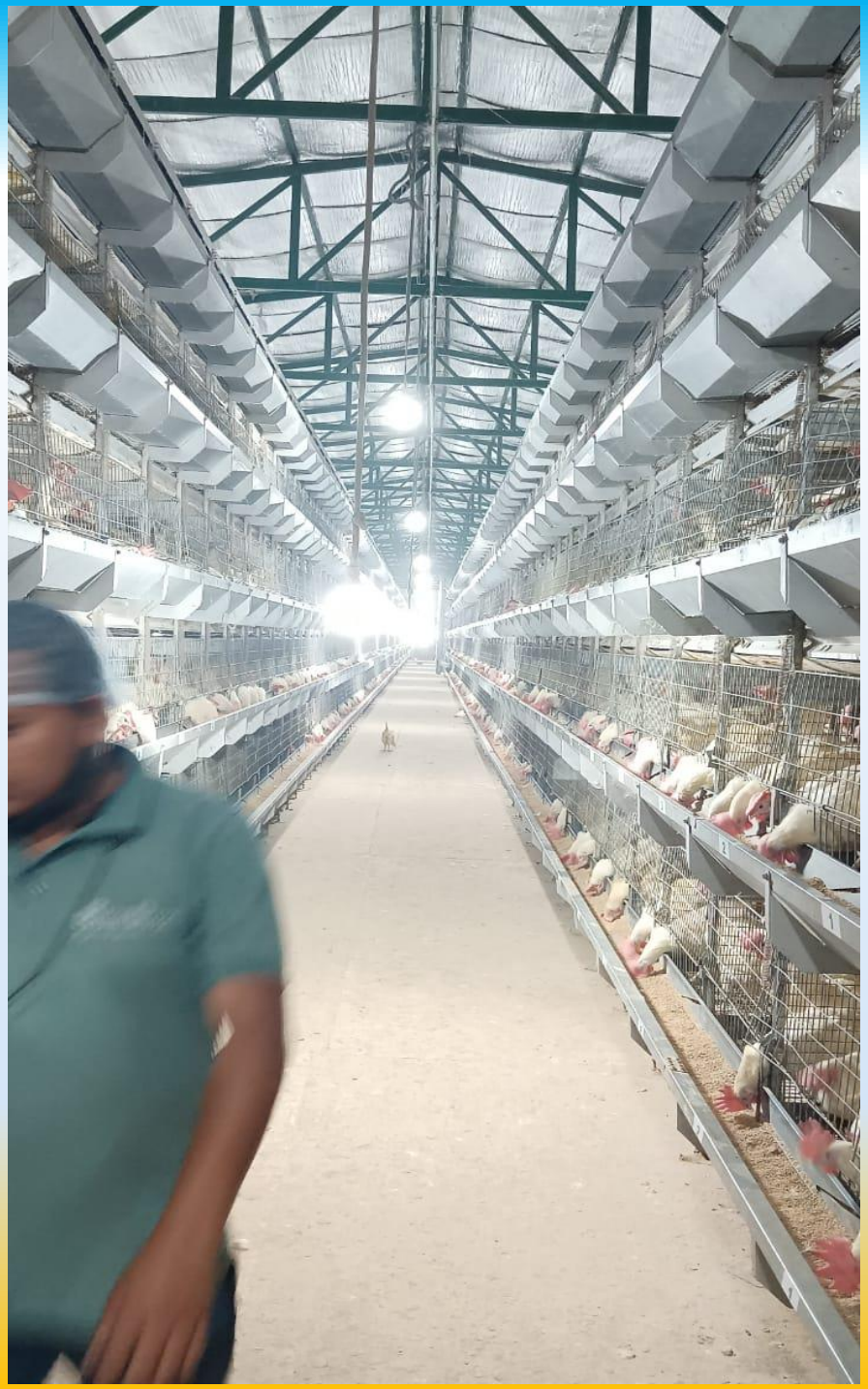
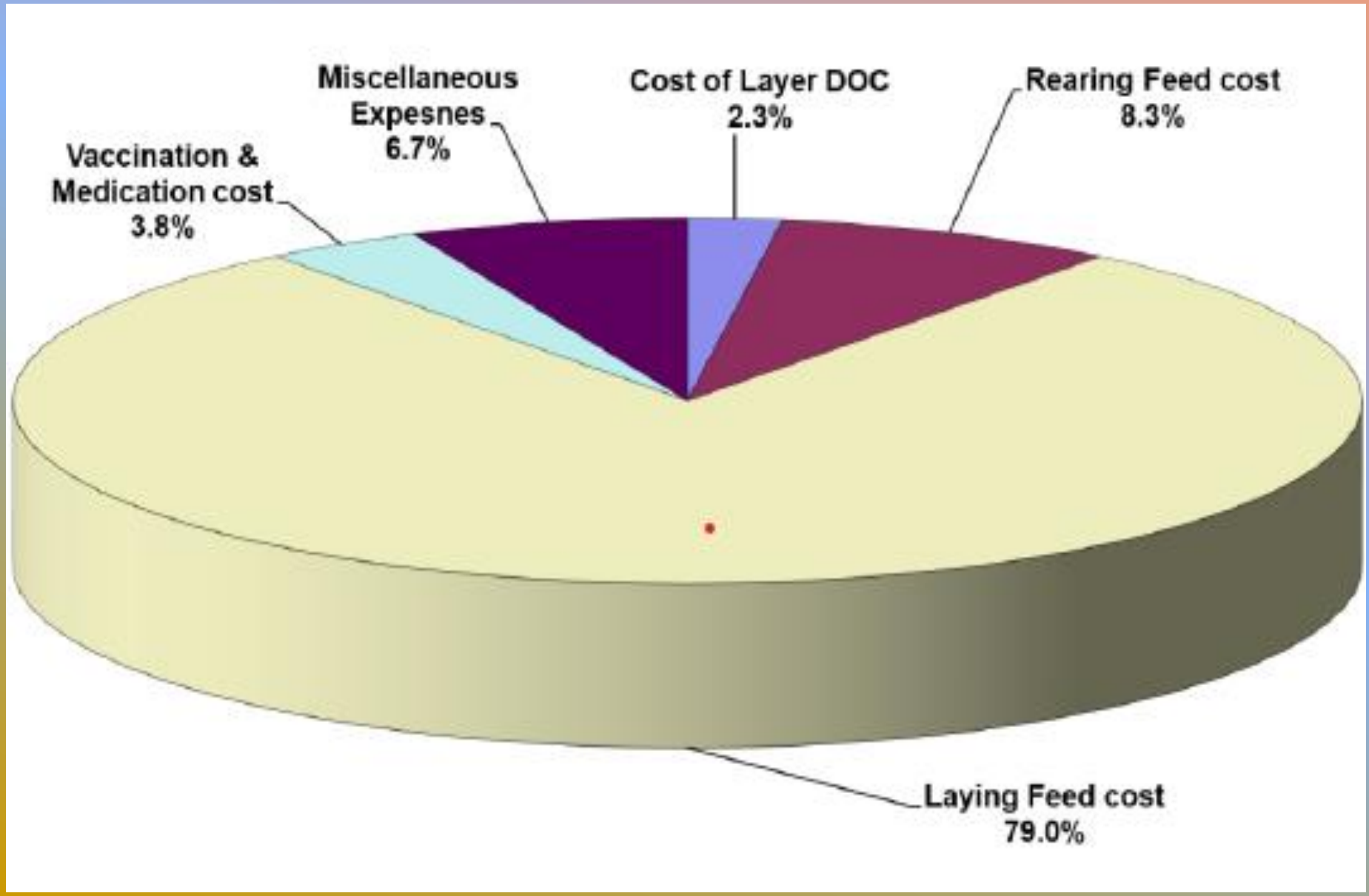


Economic indicators in commercial layers

1 gram Feed per egg	=	Rs-9/ profit per bird
1% average Hen Day Production	=	4.2 Eggs per Hen Housed
	=	17 Rs. Profit per bird
1% laying mortality	=	7 Rs profit per bird

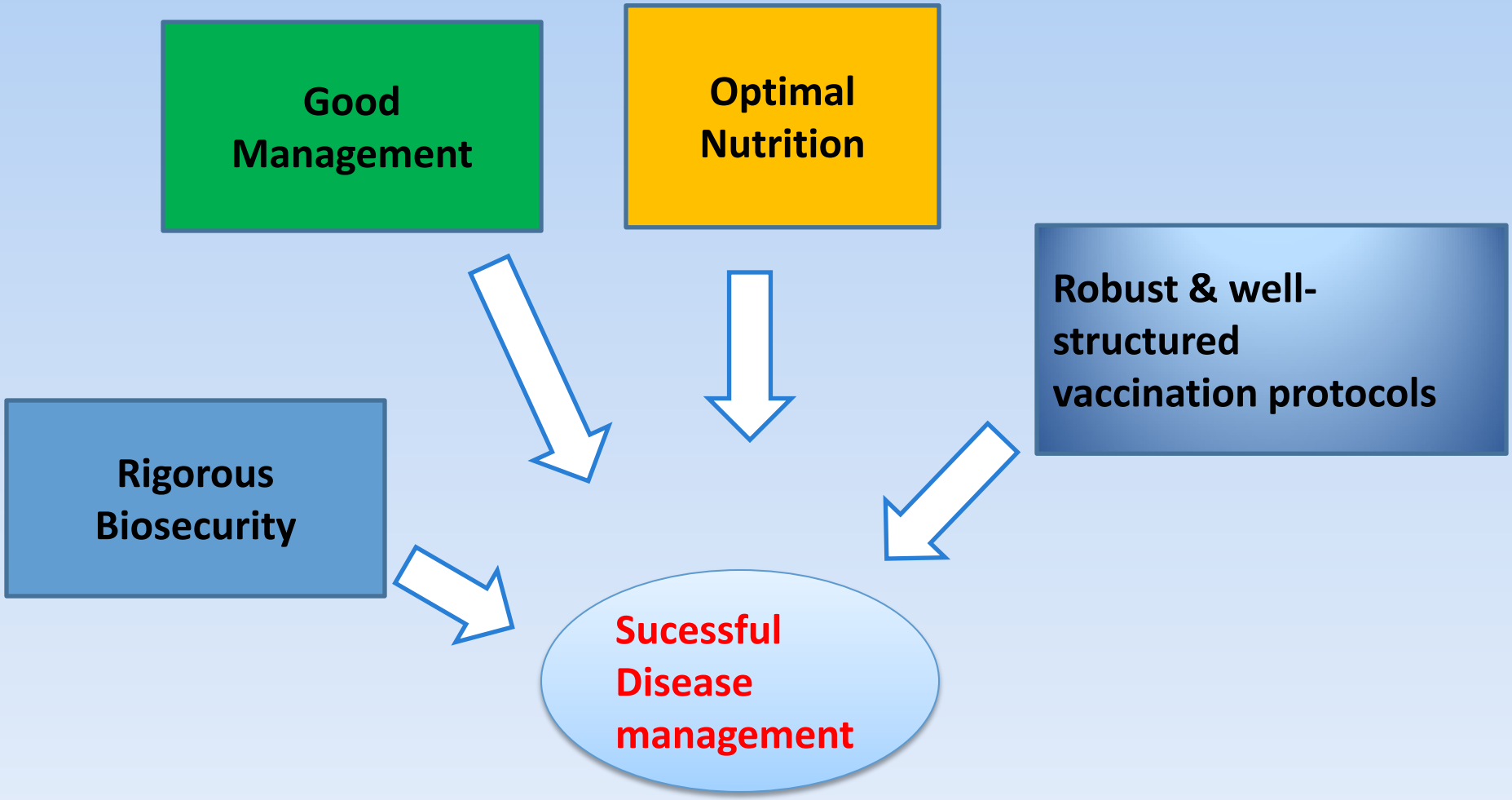

Miscellaneous
Expesnes
6.7%
Cost of Layer DOC
2.3%
Rearing Feed cost
8.3%
Vaccination &
Medication cost
3.8%
Laying Feed cost
79.0%

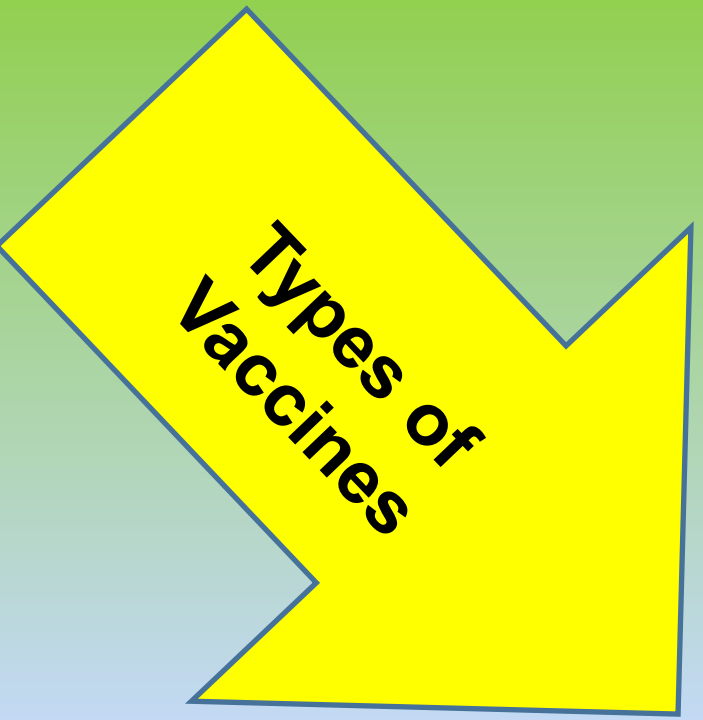
RECOMMENDED DRINKING WATER QUALITY PARAMETERS.

Parameters	Recommended Level	Parameters	Recommended Level
Physical parameters	Clear, colorless, odorless	Chlorides, mg/lit	<200
Total Bacteria count, CFU/ml	<50	Copper, mg/lit	<0.5
Total Coliform, CFU/ml	0	Fluoride, mg/lit	<1.5
pH	6.5 – 7.5	Iron, mg/lit	<0.3
Total Dissolved Solids, ppm	<1000	Magnesium, mg/lit	<50
Total Hardness, ppm	60 - 180	Manganese, mg/lit	<0.05
Salinity, ppm	<1000	Nitrates, mg/lit	<25
Oxygen Reduction Potential (ORP), mV	650 -750	Nitrites, mg/lit	<4
Ammonium, mg/lit	<0.5	Sodium, mg/lit	<50
Arsenic, mg/lit	<0.05	Sulfate, mg/lit	<250
Calcium, mg/lit	<60	Zinc, mg/lit	<1.5

Preventive Health Approach

To realize the full genetic potential of BV300 birds, it is imperative to minimize the influence of diseases within the flock.





Live attenuated virus vaccines

Inactivated (killed) virus vaccines

Recombinant virus vaccines

Inactivated (killed) Bacterial vaccines

VACCINATION METHODS

Eye drop (intraocular)	Nasal instillation
Beak dipping	Subcutaneous injection
Intramuscular injection	Wing Web prick
Drinking water	Spray vaccination

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DISEASE MANAGEMENT-

- Keep routine observations on surrounding Farms.

- Initiate immediate precautions if any out break noticed on vicinity.

-Any out break, Diagnosis must made through efficient Veterinarian & help of a LAB.

-Any Medication/Vaccinations are also required to be followed with patience & extra working hours with manpower adjustment must be followed.

-All farm should have **Disposal Pit** for regular dead & affected birds during infection.

BIO-SECURITY

- -Cheapest & most effective method of disease control.
- -A mean designed to prevent the disease into the Farm, i.e maintaining minimum traffic of Biological across its boarder.
- - As suggested for Isolation, Traffic control etc.
- a-- Isolation of the bird in a controlled environment.
- b-- All in /all-out rearing pattern
- c-- Periodic clean-up & disinfection protocol after depopulation.
- d-Control of man as labour, guests or related & non related persons.

cont-

- e-Construction of Fogging passage, change room, farm dress,vehicle stand, vehicle bath particularly Raw material vans, Egg carrying vans & own regular cars.
- f-Suggested litter carrying vans & cull bird vans should remain out of the premises & arrangements to be made to deliver at out side Gate.
- -Regular Spray of Anti Microbial Disinfectants within & out side the Shed & Premises.

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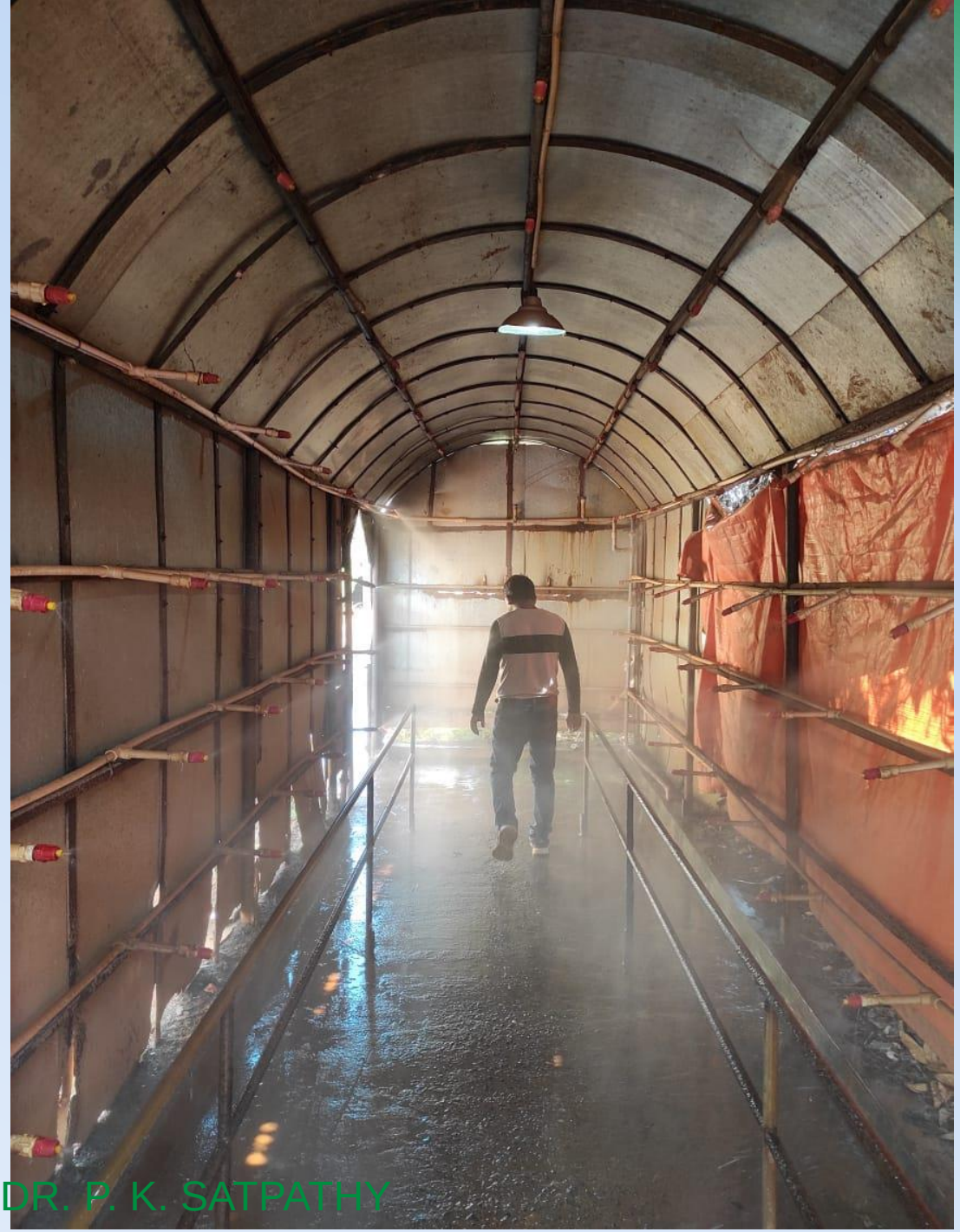

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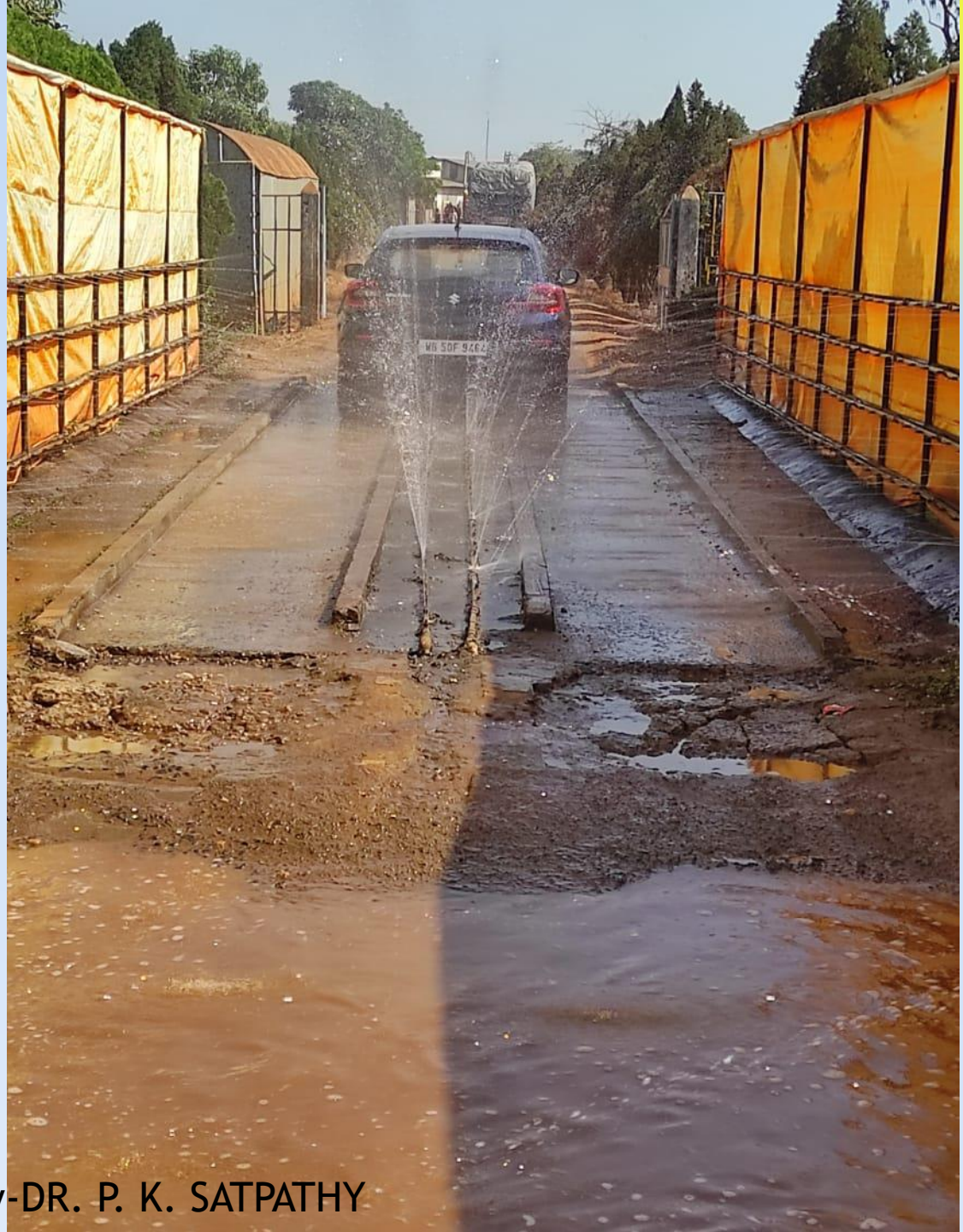

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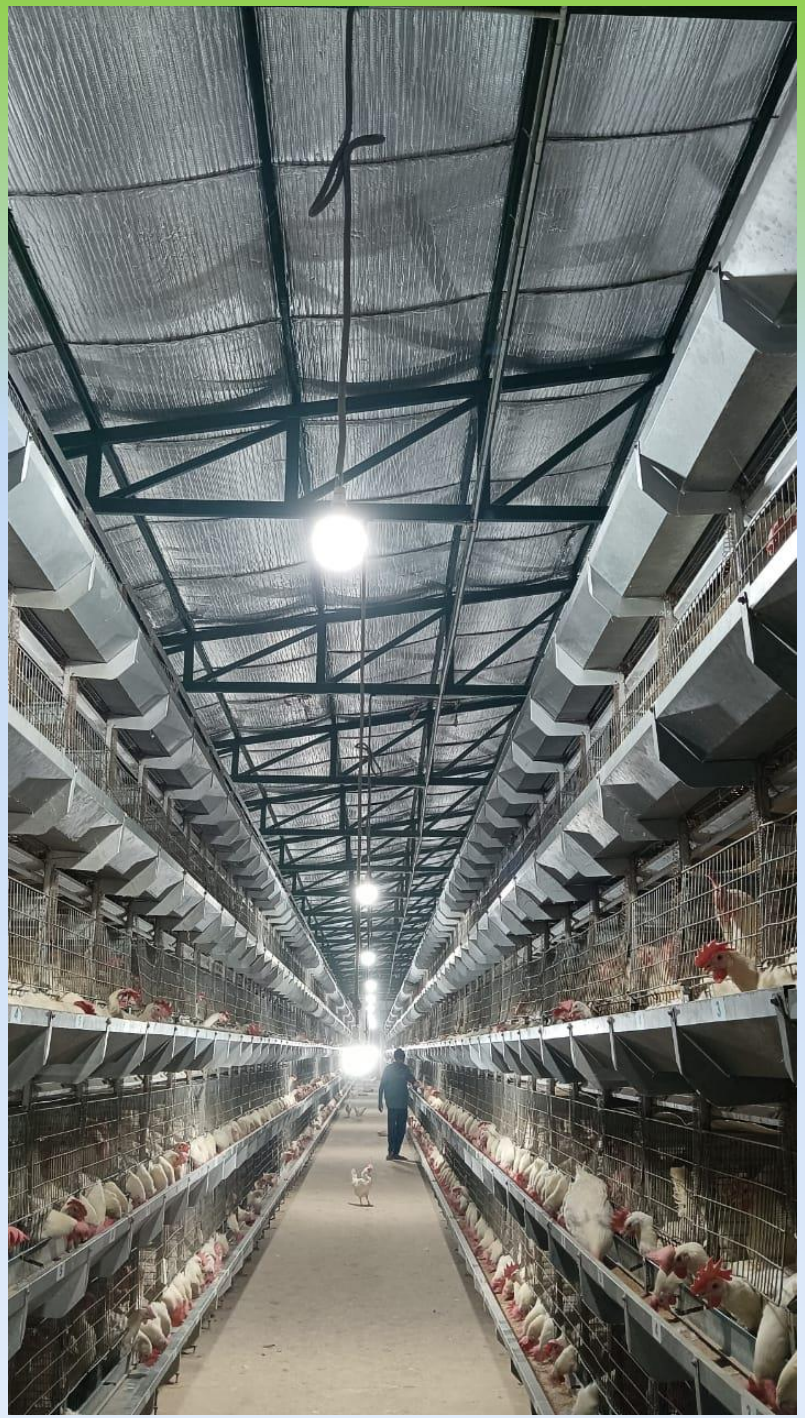

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THANK YOU, very much, Respected DR.B.V.RAO Sir,

We are Extremely Happy with the Genetic progression & offered a very nice

INDIAN POULTRY LIVE EGG Laying Machine