

NAM  STE

All The Delegates



Venkateshwara Research and Breeding Farm



V H GROUP

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# FOCUSING TOWARDS EFFECTIVE UTILIZATION OF GENETIC POTENTIAL OF LAYING HENS



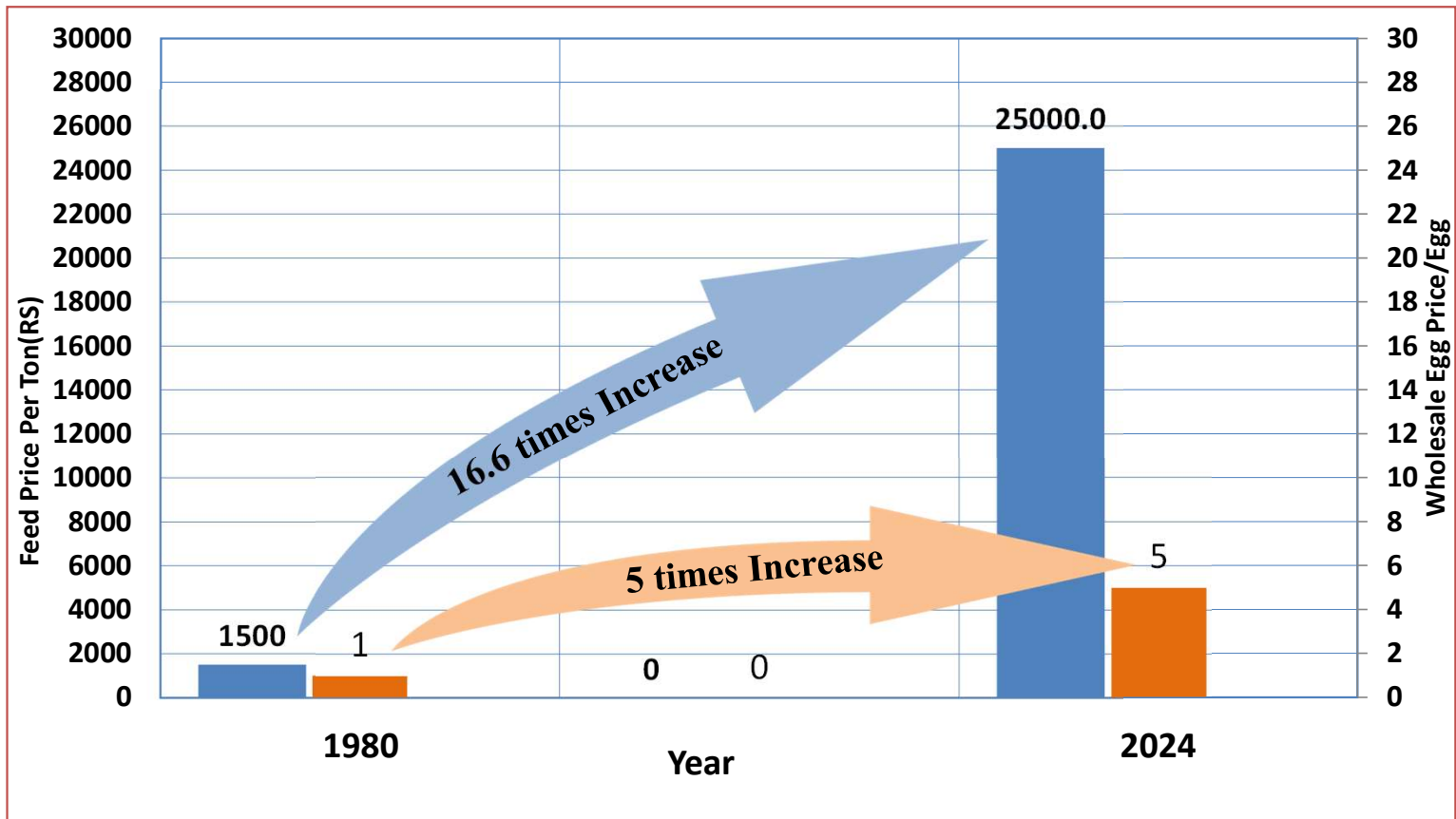
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## Comparative Prices of Egg and Feed

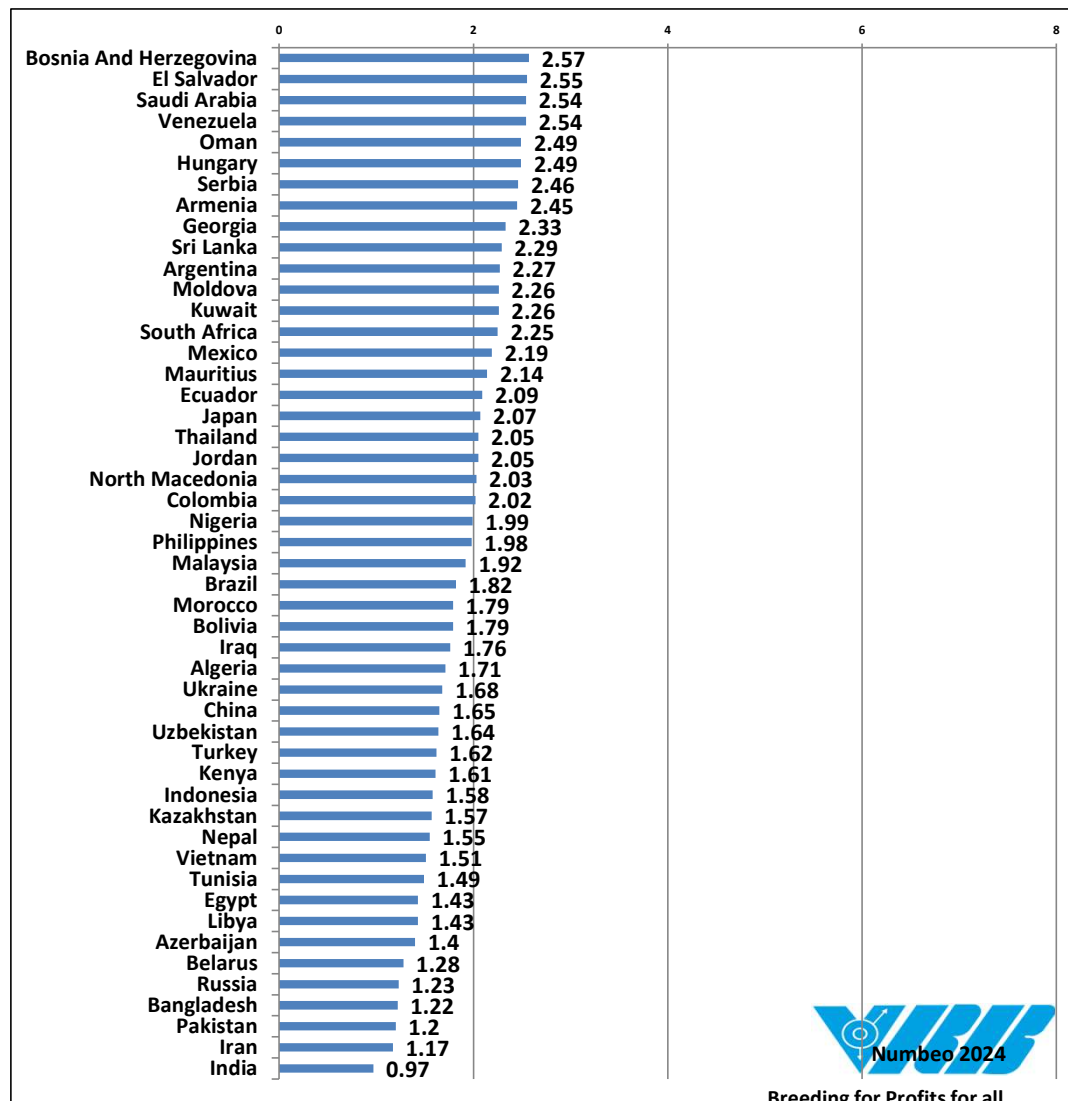
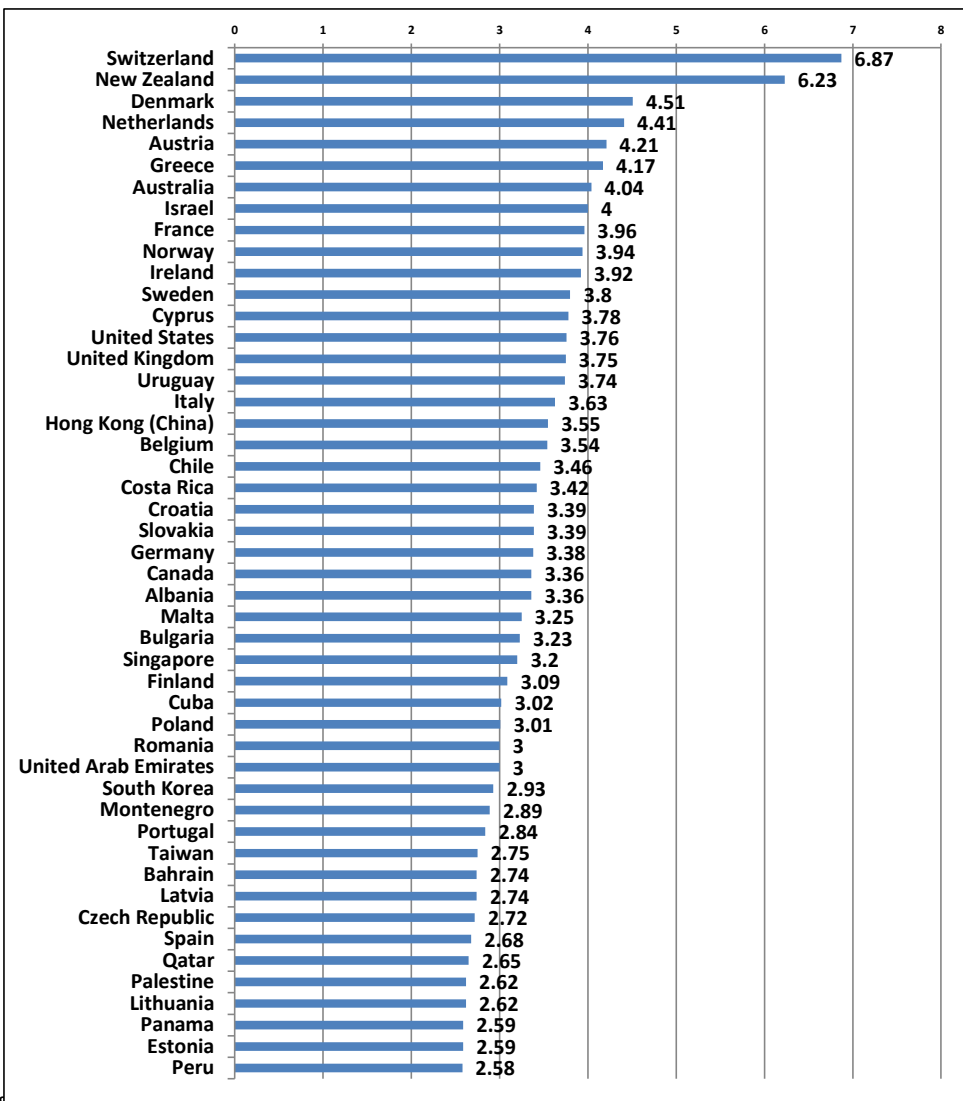


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## Price Rankings by Country for 12 Eggs (in US \$)



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$$P = G + E + GE$$

☞ Where :

**P** = Phenotype (outward expression)

**G** = Genotype

**E** = Environment

**GE** = Genotype & Environment Interaction

## The Beginning

Babcock, USA, awarded Dr. B. V. Rao sole franchise rights for Babcock Layer Breeding Stock in India and supplied Grand Parents.



Dr. B. V. Rao established Grand Parent farm, network of associate hatcheries and developed technical service team for their support.



**20th Jun 1972 : Opening of Venkateshwara Hatchery**



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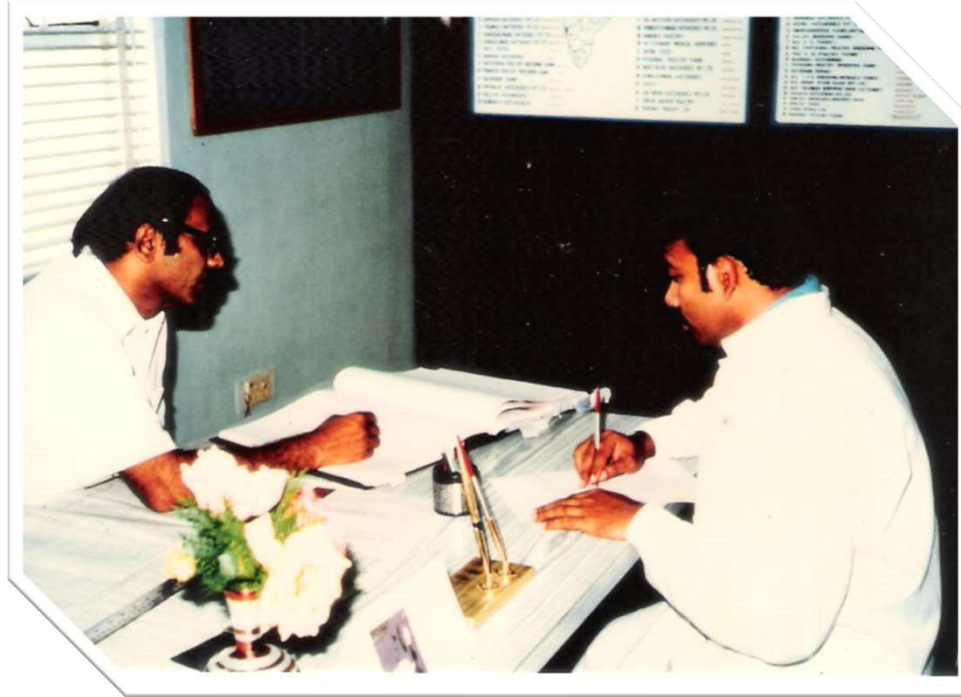
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**Venkateshwara Research and Breeding Farm  
Pure Line Layer Project**





## Team Building



**Chief Geneticist was appointed in 1980, well before the start of operations. Critical inputs in the formative years, laid strong foundation. Geneticist also joined before the start of the operations.**

## Dedicated Team - VRB



**Someone must mix the mortar.  
Someone must carry the stone.  
For neither the man nor the master  
has ever built alone.**

**In building a roof for the needy or in  
building a house for the king.**

**It is only by working together.**

**That we will ever accomplish a  
thing.**



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18<sup>th</sup> April 1981 Pure Lines arrived in VRB From Babcock, USA



**Occasion of formal inauguration of pure line project by eminent plant breeder and Director General of Indian Council of Agricultural Research Dr. M. S. Swaminathan.**



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# Facilities at Pure Line Farms In VRB

## Open Sided Layer Pedigree Houses



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# Evolution of Performance

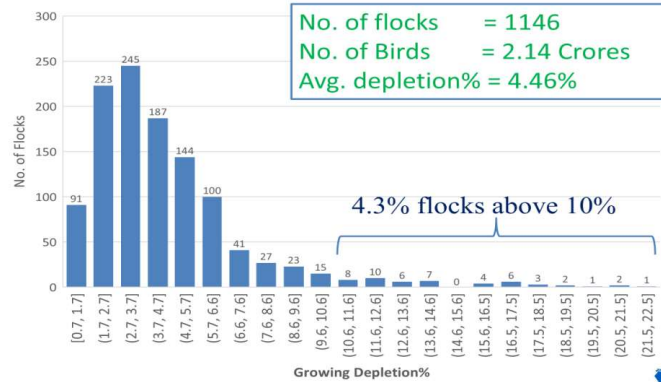


# Genetic Improvement of Layers

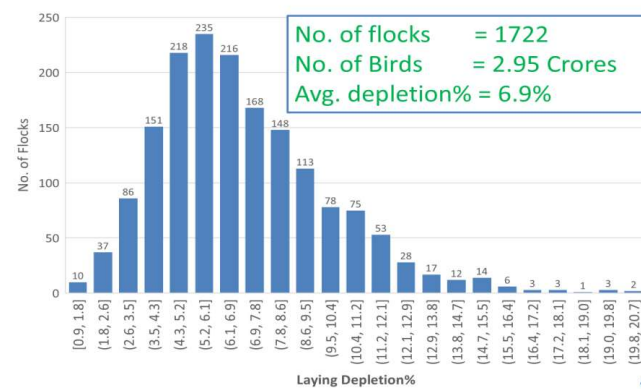
Year	1981	2023	Genetic Progress		
			Aggregate	%	Annual
Hen Housed Production(72 weeks)	270.0	340.0	70.0	25.9	1.75
Hen Housed Production(80 weeks)		<b>386.0</b>			
Hen Housed Production(100 weeks)		<b>490.0</b>			
Hen Day Production (72 weeks)	74.0	90.0	16.0	21.6	0.40
Peak production %	92.0	98.0	6.0	6.5	0.15
Livability	91.0	96.0	5.0	5.5	0.13
Early Egg Weight	46.0	50.0	4.0	8.7	0.10
Late Egg weight	59.0	60.0	1.0	1.7	0.03
Daily Feed intake	110.0	109.0	-1.0	-0.9	-0.03
Feed per egg	154.0	121.0	-33.0	-21.4	-0.83

# Performance Variation in the field

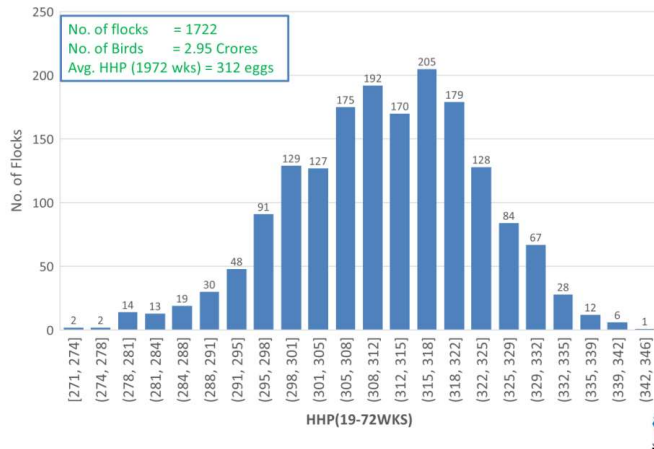
Rearing depletion% (0 to 18 wks)



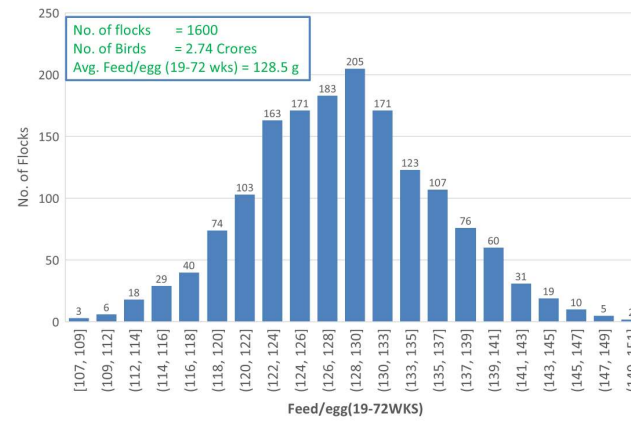
Laying depletion% (0 to 72 wks)



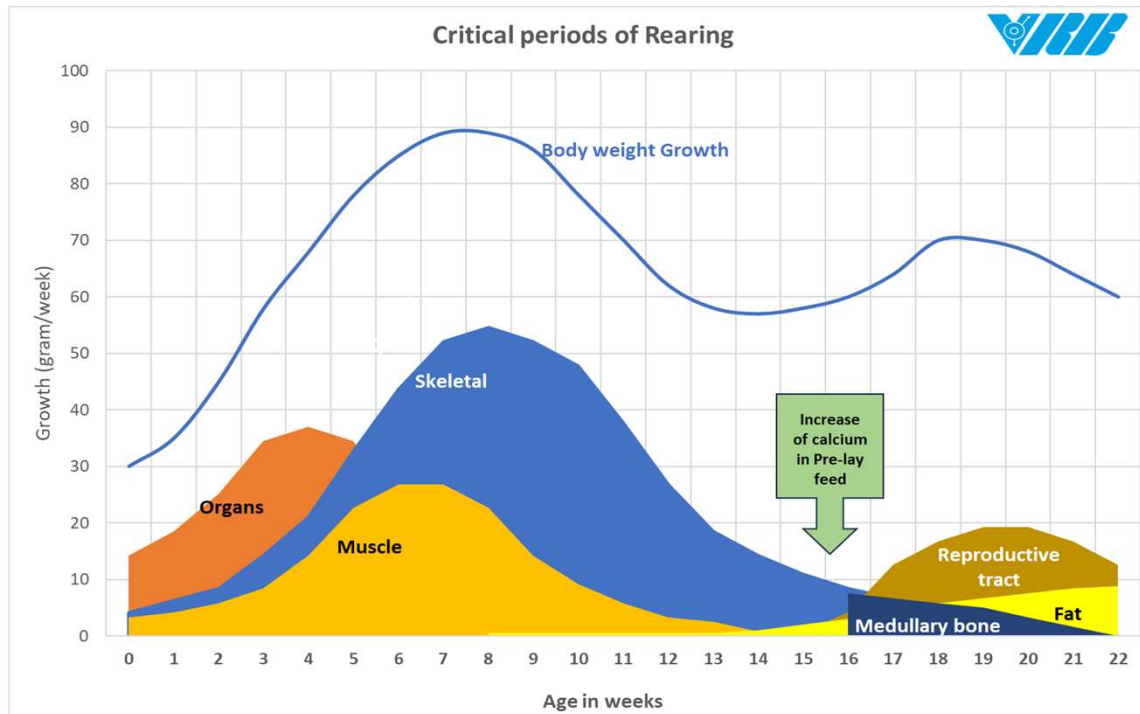
HHP (19 – 72 wks)



Feed/egg (19 – 72 wks)



*To get more eggs from hen,  
you must first build a better hen*



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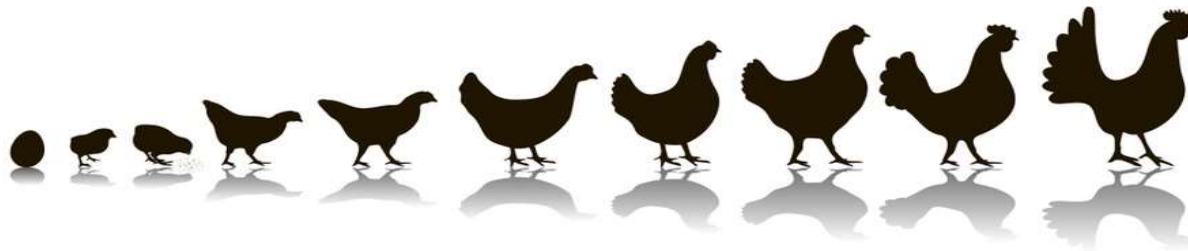


Biosecurity and disease-free flock

Brooding/Growing Management

A well-balanced feeding strategy

Properly designed lighting programme



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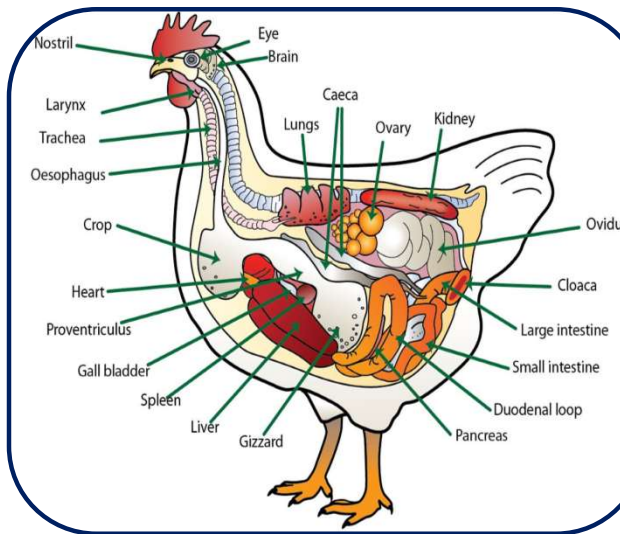


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# Rearing Period



**Chick Feed : 0 day to 400 g BW–  
(0 to 6 week)**



- Digestive System
- Immune System
- Circulatory System
- Organ
- Skeletal System
- Feathers

- Formulate the feed with highly digestible ingredients.
- Select good quality ingredients.
- Feed intake is limited during the first few weeks of the chick's life due to the limited capacity of the GIT.
- Crumble feed help to increase the feed intake.
- Keeping brooding temperature, humidity, adequate space, ventilation and water quality are of key importance.
- Start grower feed @ 400 g Body Weight.
- Less feed consumption results in low Body Weight.
- Increase the density of the nutrients if required.
- The weekly weight gain is maximum in this period
- Best feed efficiency due to lower maintenance requirement.



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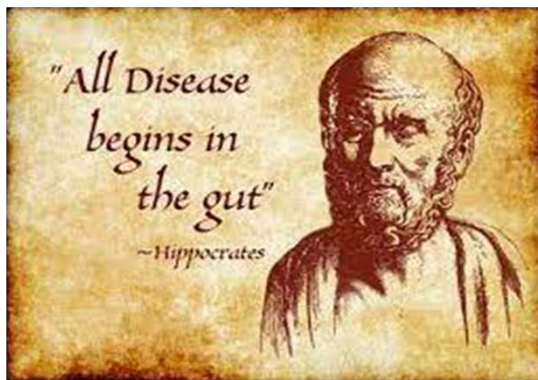


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## Rearing Period



**Grower Feed : 400 to 750 g BW–  
(7 to 10 weeks)**



**It's a quote  
attributed to the  
Ancient Greek  
physician  
Hippocrates  
nearly 2500  
years ago.**

Crumble feed is recommended to maintain growth and development.

Grower feed has a lower energy level than chick feed in order to stimulate the chick's feed intake.

Feed consumption is increasing so reduce amino acid density. Amino Acid Requirement is same.

Do not allow fine particles to accumulate.

Ensure consumption of feed offered completely within 24 hours period.

Start Developer feed @ 750 g achievement.



## Rearing Period



**Developer Feed : 750 to 1050 g BW-  
(11 to 15 weeks)**



Higher Crude Fiber Level – for development of GIT

If pullets are well trained to eat, it helps to increase feed consumption in early laying period.

Developer feed is continued up to 14 days before onset of production when comb & wattles develop & become red.

Give 50% coarse limestone grit (2 – 3mm) & 50% fine limestone for developing gizzard.



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## Rearing Period



### 3.4: Pre Lay Feed : *up to 0.5% HDP– (16 to 17 weeks)*



*Whitehead, 2004*

Enormous Physiological changes in the Bird.

Deposition of adequate Medullary bone reserves

60 -70% of the medullary calcium reserves are located in the long bones

Pre-lay feed normally contain 2.2% calcium

This bone deposition coincides with follicular maturation and is under the control of both Estrogen & Androgens (Sexual Hormones).

Pre Lay Feed should have high calcium & high nutrient levels.

Proper use of pre-lay feed can enhance the uniformity of a pullet flock.

The development of the ovary and oviduct needs energy & amino acids.



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## Rearing Period – Performance Objectives



Age weeks	Cum Depletion %	Body weight				Feed Consumption per bird (g)			Crude Protein intake (g)/bird /day	ME intake (Kcal) /bird/day	Types of Feed
		Average (g)	Range (g)	Gain /week (g)	% Gain/ week	Average (Per day)	Range (per day)	Cumulative			
1	0.8	65	60-70	30	86	11	9-13	77	2.3	32	Chick
2	1.2	110	100-120	45	69	16	14-18	189	3.3	46	Chick
3	1.5	165	150-180	55	50	18	16-20	315	3.7	52	Chick
4	1.7	235	215-255	70	42	25	23-27	490	5.1	73	Chick
5	1.9	315	290-340	80	34	35	33-37	735	7.2	102	Chick
6	2.1	400	375-425	85	27	40	38-42	1015	8.2	116	Chick
7	2.3	490	460-520	90	23	44	41-47	1323	8.1	128	Grower
8	2.5	580	550-610	90	18	48	45-51	1659	8.9	139	Grower
9	2.7	665	630-700	85	15	49	46-52	2002	9.1	137	Grower
10	2.9	750	710-790	85	13	50	47-53	2352	9.3	140	Grower
11	3.1	825	780-870	75	10	51	48-54	2709	8.4	143	Developer
12	3.2	890	840-940	65	8	54	51-57	3087	8.9	151	Developer
13	3.3	950	900-1000	60	7	56	53-59	3479	9.2	148	Developer
14	3.4	1000	950-1050	50	5	58	55-61	3885	9.6	154	Developer
15	3.5	1050	1000-1100	50	5	60	56-64	4305	9.9	159	Developer
16	3.6	1105	1050-1160	55	5	62	57-67	4739	10.5	161	Pre-lay*
17	3.7	1170	1110-1230	65	6	63	58-68	5180	10.7	164	Pre-lay
18	3.8	1240	1180-1300	70	6	66	60-72	5642	11.2	172	Phase-1**



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## Rearing Period – Nutrient Requirements



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	Unit				
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
Dig. Lysine	%	1.00	0.90	0.70	0.73
Dig. Methionine	%	0.50	0.44	0.36	0.38
Dig. Methionine + Cysteine	%	0.77	0.70	0.60	0.64
Dig. Threonine	%	0.67	0.61	0.49	0.51
Dig. Tryptophan	%	0.21	0.19	0.16	0.17
Dig. Arginine	%	1.10	0.99	0.77	0.80
Dig. Isoleucine	%	0.74	0.67	0.56	0.59
Dig. Valine	%	0.82	0.74	0.67	0.68
Calcium	%	1.05	1.05	1.05	2.20
Available Phosphorus	%	0.48	0.46	0.42	0.42
Sodium	%	0.20	0.18	0.18	0.18
Chloride	%	0.20	0.18	0.18	0.18
Potassium	%	0.92	0.87	0.86	0.84
Linoleic Acid	%	1.50	1.30	1.25	1.50



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## Laying Period – Recommended Nutrient Requirements



Nutrient	Unit	Phase-I	Phase-II	Phase-III	Phase-IV
		From 0.5% production until 30 weeks age	31 to 50 weeks age	51 to 70 weeks age	71 weeks above age
Metabolizable Energy	Kcal/kg feed	2650	2600	2550	2550
Crude Protein	g/day	17.0	16.75	16.50	16.0
Crude Fiber (minimum)	%	4.0 – 5.5	4.5 – 6.0	4.5 – 6.0	4.5 – 6.0
Ether Extract (minimum)	%	3.0 - 3.5	2.5	2.0	2.0
Dig. Lysine	g/day	0.750	0.725	0.700	0.675
Dig. Methionine	g/day	0.420	0.380	0.350	0.320
Dig. Meth. + Cysteine	g/day	0.675	0.635	0.600	0.570
Dig. Threonine	g/day	0.53	0.51	0.49	0.47
Dig. Tryptophan	g/day	0.17	0.17	0.16	0.15
Dig. Arginine	g/day	0.83	0.80	0.77	0.74
Dig. Isoleucine	g/day	0.58	0.56	0.53	0.51
Dig. Valine	g/day	0.68	0.66	0.64	0.62
Calcium	g/day	4.00	4.30	4.60	4.75
Av. Phosphorus	g/day	0.40	0.38	0.32	0.30
Sodium	g/day	0.18	0.18	0.18	0.18
Chloride	g/day	0.18	0.18	0.18	0.18
Potassium	g/day	0.78	0.77	0.76	0.75
Linoleic Acid	g/day	1.20	1.20	1.10	1.00



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# Vitamins & Minerals



	Vitamins/Minerals	Units	per kg feed
<b>Vitamins</b>	Vitamin A	IU	12000
	Vitamin D3	IU	3500
	Thiamine (B1)	mg	4
	Riboflavin (B2)	mg	10
	Niacin (B3)	mg	40
	Pantothenic acid (B5)	mg	15
	Pyridoxin (B6)	mg	5
	Biotin (B7)	mcg	100
	Folic Acid (B9)	mg	1
	Cyanocobalamin (B12)	mcg	25
	Ascorbic Acid (Vit.- C)	mg	50
	Vitamin E	mg	50
	Vitamin K3	mg	3
<b>Minerals</b>	Choline Chloride 60% added	mg	1500
	Copper	mg	20
	Zinc	mg	110
	Iron	mg	80
	Manganese	mg	110
	Iodine	mg	1.2
Selenium	mg	0.4	

Based on BV300 Nutrition & Management Guide 2023

Add 250 mg/kg feed additional Vit - C in hot & stressful condition.

If there is possibility of more than usual loss of vitamins in the process of feed manufacturing and/or in specific disease condition, the vitamin levels may be increased as per the suggestions of the Nutritionist or disease expert.

Store all vitamins in air-conditioned room.

**Use quality vitamins and minerals for achieving the performance objectives.**



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## Ingredient and Feed quality

Modernized Harvest Technology

Good storage facility

Bulk load tanker transport

- Reduces cost/ton
- Labor efficient
- Biosecurity

Raw material Price fluctuations



## Feed Toxicity

### Harmful Effects Of Mycotoxins in Layers

- Reduced feed consumption
- Poor growth rates
- Reduced egg production
- Reduced feed conversion (FCR)

- Increased susceptibility to diseases
- Increased mortality
- Poor eggshell quality

- Increased incidences of blood spots
- Pale yolk
- Reduced fertility and hatchability
- Leg problems in young chicks



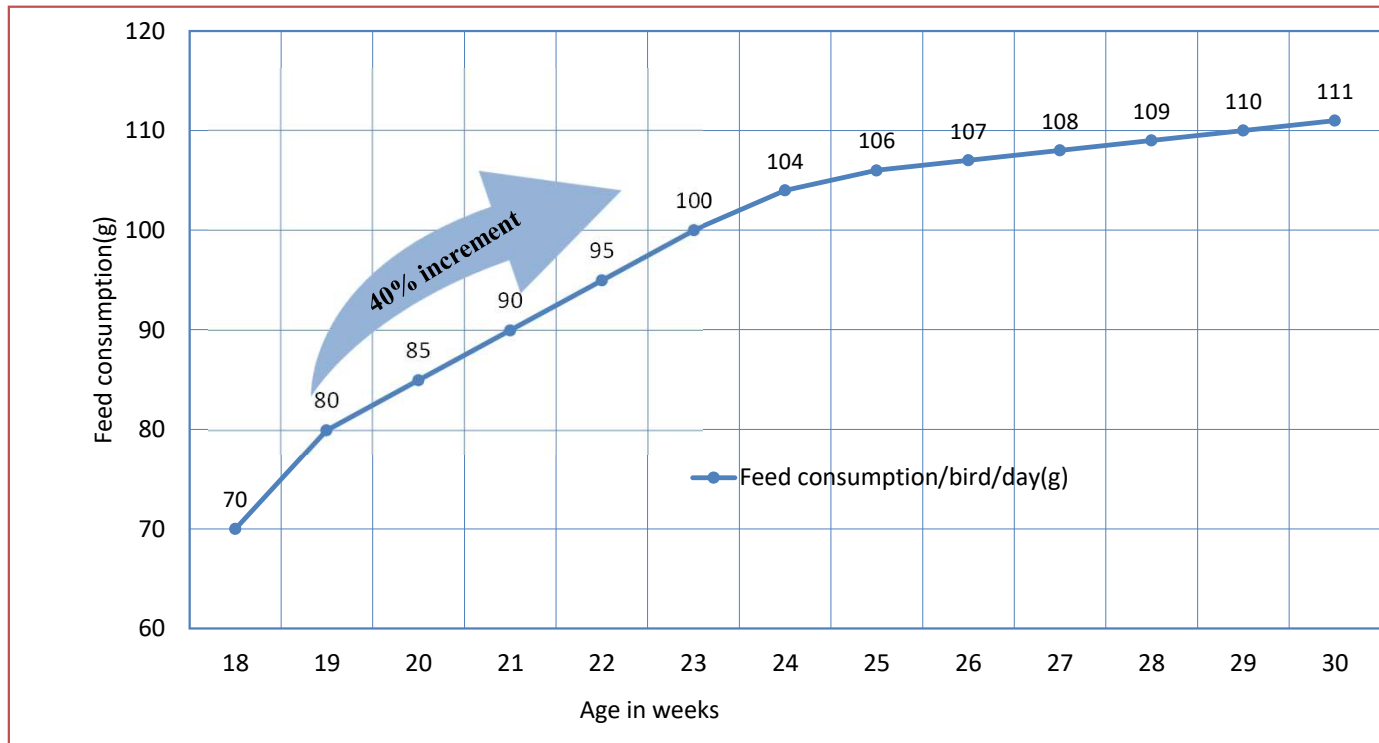


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## Increment in **feed consumption** from first egg to peak

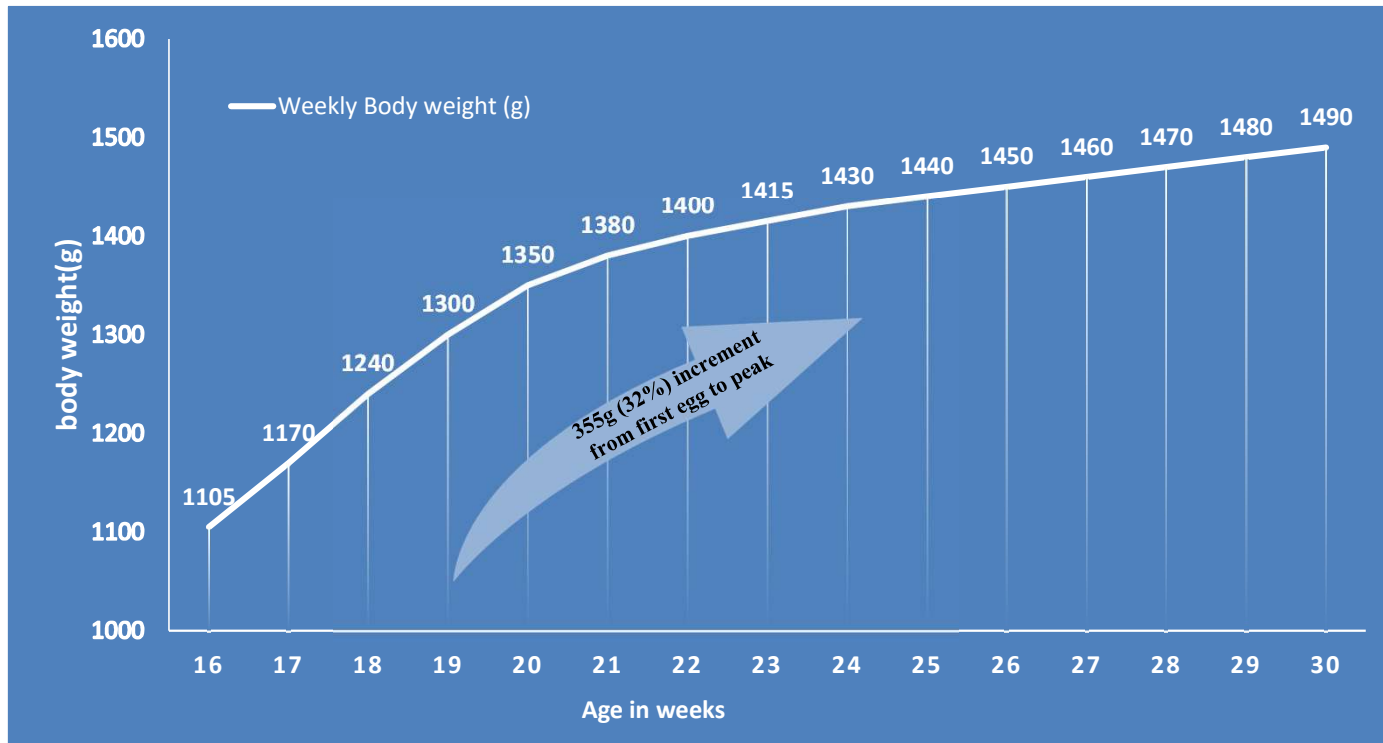


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## Increment in **body weight** from first egg to peak

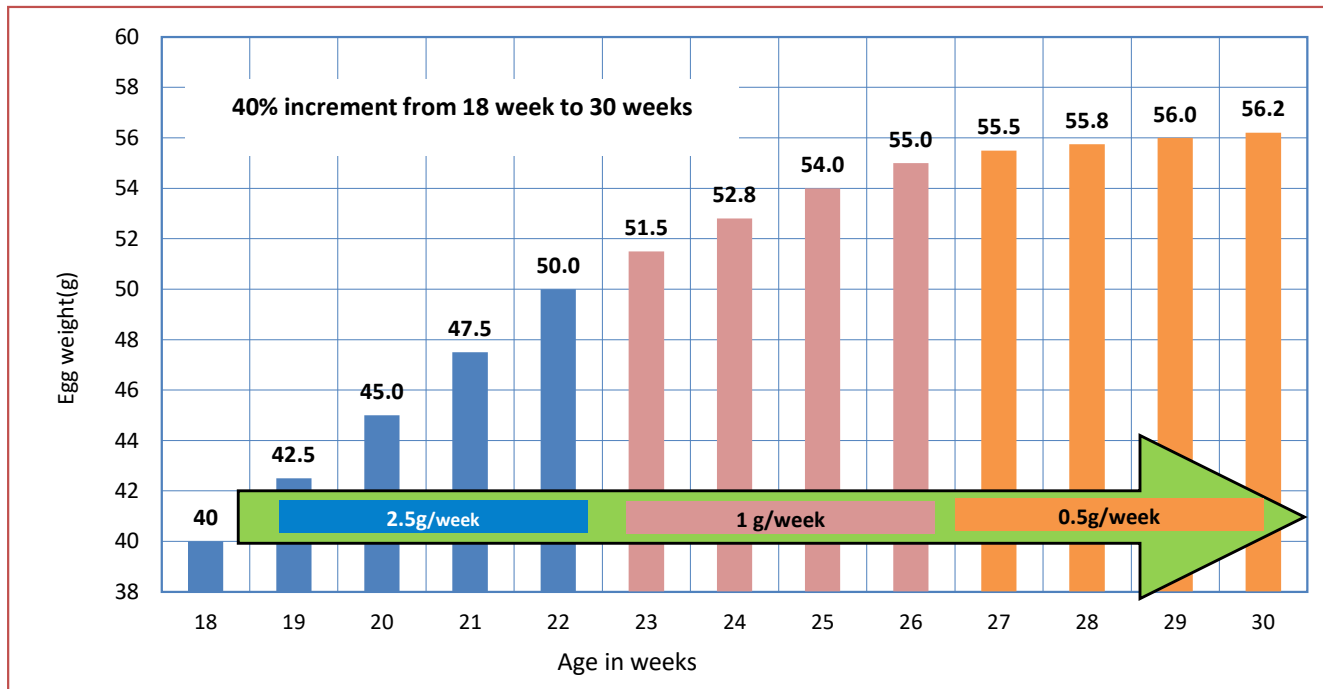


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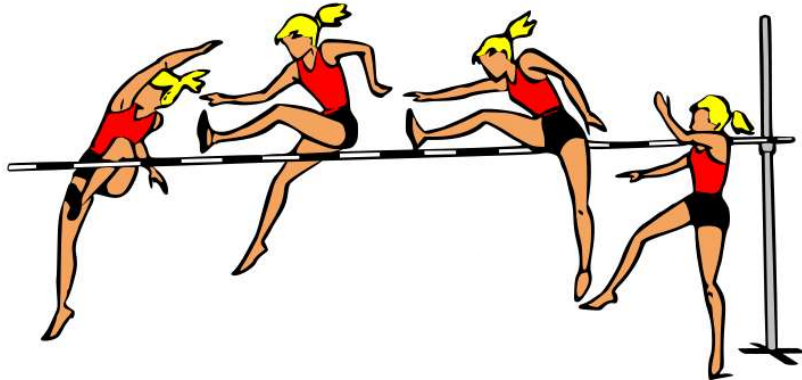
## Weekly increment in Egg weight



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# Bio-security

Bar is raising continuously.

Yielding good results. There is need for further?

Advice for following **cleaning** and **disinfection** protocol including **thermal fogging**.

Proper disposal of dead birds.



# Biosecurity

Location and site of the farm

Separate isolated site for *layers* away from Rearing farm.

Distance between farms/sheds

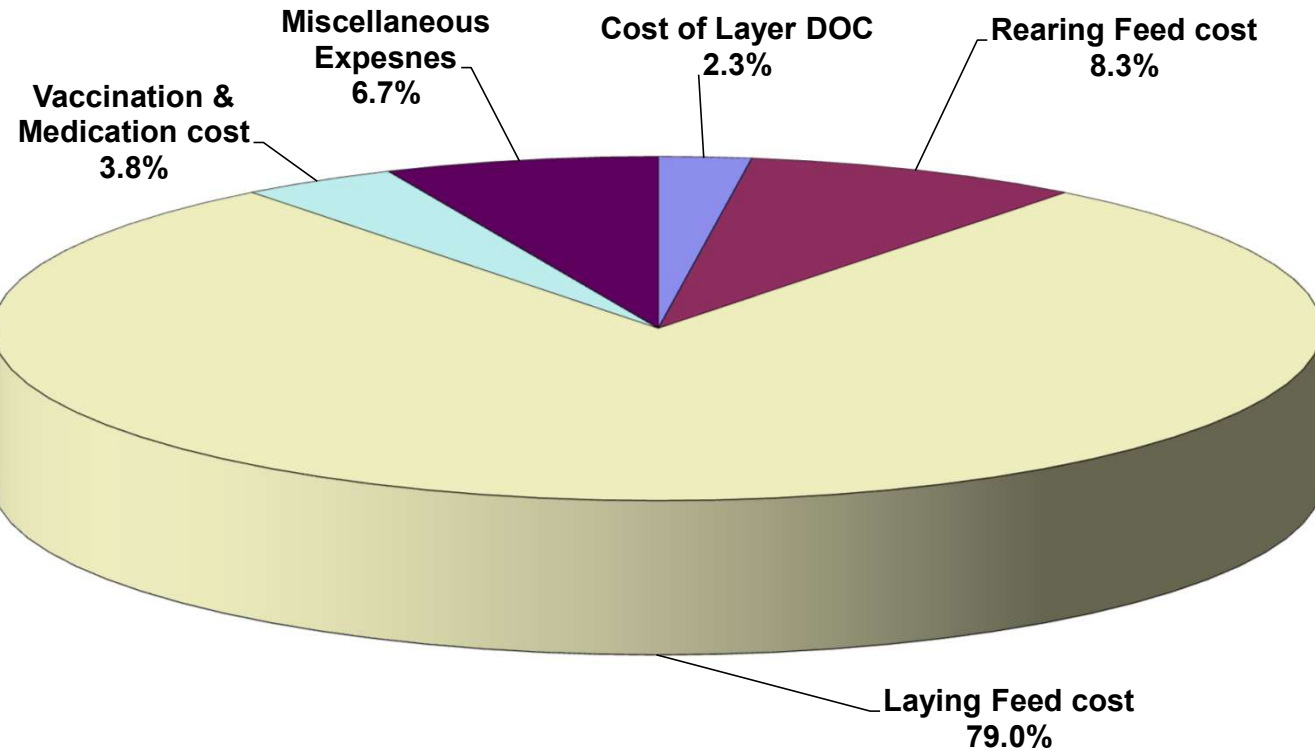
All – In – All – Out systems.

Flock schedule

Control of man and material movement



## Components of Egg production cost (100 week)



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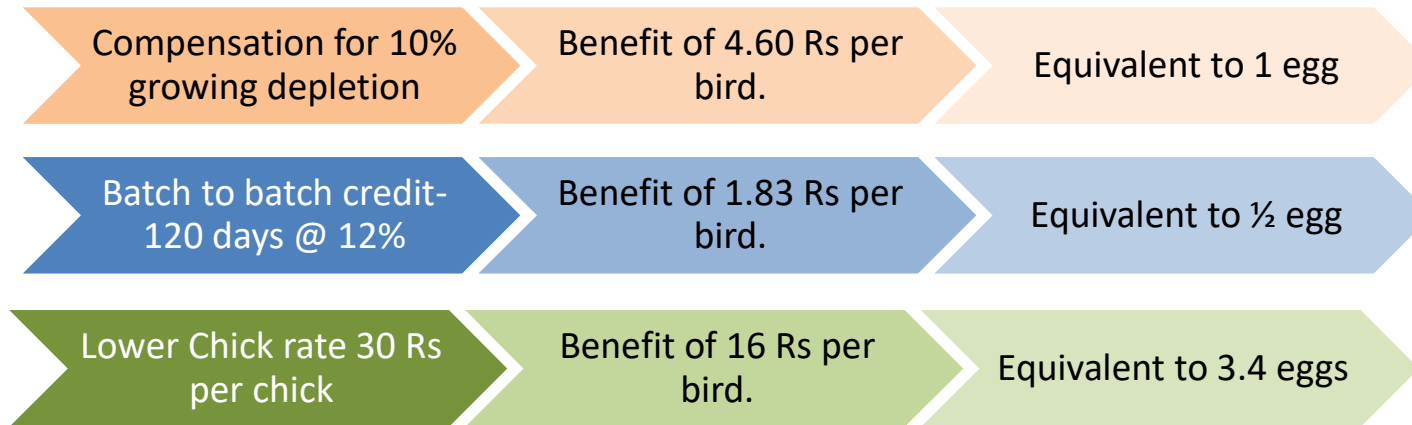


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## Economics of marketing strategies by competitors

Free chicks%

Free %	Chick Base Rate (Rs)	Realized Rate/chick (Rs)	Difference	in terms of eggs
5	46	43.81	2.19	<b>0.5</b>
10	46	41.82	4.18	<b>0.9</b>
15	46	40.00	6.00	<b>1.3</b>
20	46	38.33	7.67	<b>1.6</b>
25	46	36.80	9.20	<b>2.0</b>
30	46	35.38	10.62	<b>2.3</b>



For calculation average NECC egg price for the year 2023 at Hyderabad considered



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## Economic indicators in commercial layers

↓ 1 gram Feed per egg	≡	↑ 12 Rs profit per bird
↑ 1% average Hen Day Production	≡	↑ 5.5 Eggs per Hen Housed
	≡	↑ 25 Rs. profit per bird
↓ 1 % laying mortality	≡	↑ 11 Rs profit per bird
↓ 1000 Rs. per ton feed cost	≡	Economical if HDP% is not reduced more than 2.5% ( equivalent to 14 eggs HHP)
↑ 1 Rs. DOC Price	≡	↑ 0.2 paise Egg production cost



# Take Care of Your Bird & She will take care of You



Late Padmashri Dr. B V Rao



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👉 **The impossible exits only until we find a way to make it possible.**



*(Mike Horns)*

***Thank You  
For Kind Attention***



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