



# Feeding management of commercial broiler chicken

**Dr. P.Vasanthakumar, M.V.Sc., Ph.D.,**

Professor & Head,  
Department of Animal Nutrition,  
Veterinary College and Research Institute,  
Namakkal- 637 002, Tamil Nadu.





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## Current status of poultry production

- ▶ **United States of America - largest poultry meat producer - 17 percent of global output, followed by China and Brazil.**
- ▶ **China - world's largest egg producer - 38 percent of global production, followed by the United States (7 percent) and India (7 percent).**
- ▶ **Poultry sector in India - valued at about Rs. 1,00,000 crore - commercial sector 80 % & unorganized sector about 20 %.**
- ▶ **Per capita availability of eggs to 91 eggs per annum in India (2020-21)**
- ▶ **Total poultry feed production of country stands at 26 million tonnes.**
- ▶ **At present accounting for 45 % of total meat consumed from livestock.**



## Nutritional management – types of feeds

### ▶ Mash

Ground and completely homogenously mixed feed is called mash - suitable for all categories of birds - preparation cost is less and loss of nutrient during processing is also less - Disadvantage is wastage of feed during handling and consumption by birds.

### ▶ Pellet

Suitable for all categories of birds more than 2 -3 weeks of age. Preparation cost is more but wastage of feed is less and selective feeding is prevented causing optimum utilization.

### ▶ Crumble

Pelleted feed reduced to granular form is called crumble. Suitable for birds of 0 -3 weeks of age - preparation cost is more but wastage of feed is less and selective feeding is also prevented similar to pelleted feed.



## Crumble feed - Advantages

- ▶ **Crumble - pelleted feed which is broken into small pieces**
- ▶ **Each pick contain all the nutrients uniformly**
- ▶ **Selective feeding and wastage avoided**
- ▶ **Bird eat more & grow faster than mash feed**

Feed particle size  
– 500 – 700 micron for  
chicks





## Nutritional management – Feeding systems

- ▶ **Size and number of feeder – Change according to the age**
- ▶ **Height - Change according to the bird's height**
- ▶ **Frequency of feeding – 2 or 3 times minimum**
- ▶ **Lighting and water – 24 hours**
- ▶ **Feeding system - each chicken has an equal chance to eat an equal amount of feed at the same time.**





## Automation in feeding systems



- ▶ **No need to enter the poultry house for feeding / watering**
- ▶ **Stress reduced**



## Significance of Phase feeding

### Diet type 1 :-

- ▶ **Nutrient-rich to optimize live weight gain and feed conversion.**  
Promote additional carcass lipid content and the diet cost will be high.

### Diet Type 2:-

- ▶ **Lowered energy content but optimal crude protein and amino acid content.**  
Less lipid gain but maximize lean mass production.  
Live weight and feed conversion will be negatively affected but cost per lean mass will be optimal.

### Diet Type 3:-

- ▶ **Low nutrient concentration.**  
Lower live weight growth and higher feed conversion but cost per unit live weight may be optimum.

**Young birds require more protein & calcium whereas adult birds require more energy for fattening.**



## Calorie-protein ratio : BIS (2007) for broiler chicken

Characteristics	Broiler		
	Prestarter ( 1 week)	Starters ( 2-3 weeks)	Finisher ( 4-6 weeks)
Crude protein, min	23	22	20
ME ( kcal / kg) min	3000	3100	3200

Type	calorie protein ration
Broiler prestarter	130 ( 3000/23)
Broiler starter	141 ( 3100/22)
Broiler finisher	160 (3200/20 )





## Feed consumption and FCR

Age In weeks	Feed intake ( g)	Body weight ( g)	FCR
1	130	110	1.18
2	460	380	1.21
3	950	720	1.32
4	1800	1300	1.38
5	2600	1700	1.52
6	3500	2100	1.67



## Feeding space requirements

Age	Feeder space requirement/ bird	Water space requirement/bird
Up to 18 days	3 cm	1.5 cm
From 19 - 42 days	6-7 cm	3 cm

### Pellet size

Pre starter ( 0- 10 d)	Starter ( 11 - 21 d)	Grower ( 22- 32 d)	Finisher ( 32 d + )
2.0mm	3.5 mm short	3.5 mm	4.5 - 5 mm

Grower Finisher pellet size	Body weight gain (20- 40 d ) ( g)	Feed : Gain ( 20-40 d)
2mm	1500	2.28
3mm	1610	2.17
4mm	1708	2.05
5mm	1720	2.01



## Effect of pelleting on broiler performance

Body weight (g)	14 d	21 d	35 d	44 d
Mash	370	750	1830	2730
Pellet	460	925	2200	3230
▲	+24%	+23%	+20%	18%
<b>Feed: Gain</b>				
Mash	1.83	1.86	1.93	2.02
Pellet	1.43	1.54	1.71	1.85
▲	-29%	-21%	-13%	-9%

**Chewning (2012)**



## Effect of feed texture & particle size on the performance of broiler chicken

Particle size	Feed form	B.wt. at 6 week ( kg)	Feed/Gain
Fine particle	Mash	1.94	1.91
	Pelleted	2.13	1.84
Coarse	Mash	1.98	1.92
	Pelleted	2.11	1.82
Very coarse	Mash	2.0	1.92

Hammer mill **screen size of 3 mm** can be recommended for grinding feed for broiler chicken production up to 42 days of age.

Starter diets should contain a small percentage of coarse particles of corn, which should then gradually increase with BW and age.



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# Model Broiler Chicken Ration : pre-starter, Starter and finisher diets

Ingredient	Pre-starter diet	Starter diet	Finisher diet
<b>Maize (%)</b>			
Other grains – bajra / sorghum / broken rice – Not exceed 1/3 parts.	50	55	60
<b>Soyabean meal (%)</b>			
Other oil cakes such as de-oiled Groundnut cake / Fish meal – Not exceeding 10 %	40	33.5	28
Rice polish	5	5	5
Vegetable oils / animal fats (%) – rice bran / palm / lard / tallow / soap stock / soybean oil etc.	2	3	4
Calcite / Lime stone powder (%)	1.2	1.3	1.3
Di-calcium phosphate (%)	1.1	1	1
Salt (%) – Sodium chloride	0.27	0.28	0.3
L-Lysine hydrochloride (78 %) (g/100kg)	0.19	0.19	0.17
DL-methionine (99 %) (g/100kg)	0.3	0.25	0.24

Additives and supplements			
Trace minerals	As per the company recommendations		
Vitamin mixture			
Livertonic			
Coccidiostat			
Toxin binder ( % )	0.1	0.1	0.1
NSP degrading enzyme (g/100kg)	0.05	0.05	0.05
Choline chloride (g/100kg)	0.1	0.1	0.1
Soda bicarbonate (g/100kg)	0.2	0.25	0.2
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>