



# 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.



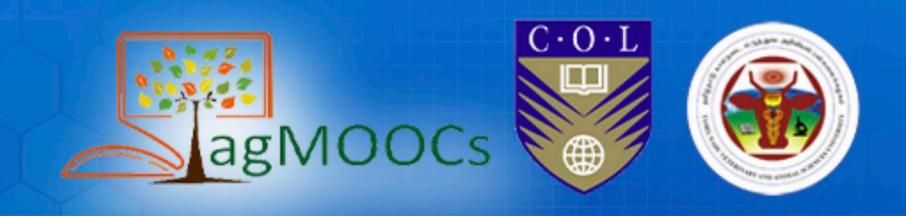


## Feeding management of commercial broiler chicken



### 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 unformly
- 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.

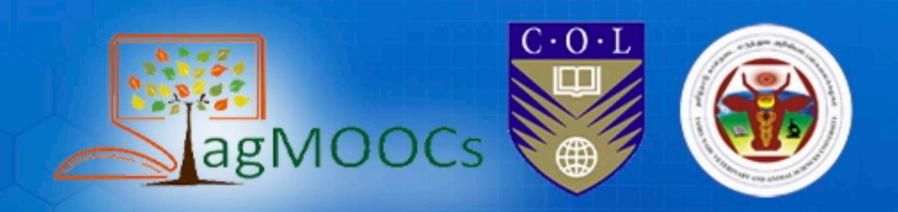
#### Diet Type 2:-

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

Lesson (2015)





## 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%
Feed: Gain				
Mash	1.83	1.86	1.93	2.02
Pellet	1.43	1.54	1.71	1.85
	-29%	-21%	-13%	-9%

Chewning (2012)



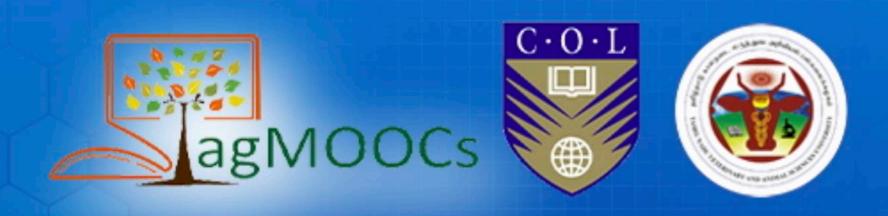


## Effect of feed texture & particle size on the performance of broiler chicken

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.



## 1-14/14/14/14

## 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.



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

Ingredient	Pre-starter diet	Starter diet	Finisher diet
Maize (%)  Other grains – bajra / sorghum / broken rice –  Not exceed 1/3 parts.	50	55	60
Soyabean meal (%)  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			
Vitamin mixture	As per the company recommendations		
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
Total	100	100	100