

## **II FORMULATION OF RATION FOR POULTRY**

**(BIS 2007)**

### **Broiler rations**

- 1. Fix/ leave slack space: 3 kg**  
For nutritive and non-nutritive feed additives, natural feed ingredients added at later stage while balancing the ration.
- 2. Fix level of cereal by-products i.e. Rice bran/Rice polish: 10 kg** (for Pre-starter, Starter and Finisher feeds).
- 3. Fix level of vegetable oil/animal fat: 5 kg, 6 kg and 7 kg** for Pre-starter, Starter and Finisher feeds, respectively.
- 4. Calculate proportion of Energy feed and Vegetable protein through Pearson square method**
- 5. Balance ME content:** Same as you have done in BIS (1992)
- 6. Balance Available phosphorus:** Same as you have done in BIS (1992)
- 7. Balance Calcium Content:** Same as you have done in BIS (1992)
- 8. Balance Sodium content:** Same as you have done in BIS (1992)
- 9. Balance Limiting amino acids (Lysine & Methionine):** Calculate supply of both amino acids from above feed ingredients, total it and remaining requirements can be meet out by addition of synthetic L-Lysine and DL-Methionine. It is not necessary to supply these amino acids by use of animal protein source, you can also supply through syn. Lysine and Methionine.
- 10. Check Crude fiber level:** calculate CF contributed by different feed ingredients, total it and compare with recommended Max. CF levels given in the feeding standard, it should not be higher than that level.
- 11. Finally total, quantities of feed ingredients and each nutrients it should match with the recommended nutrient levels given in the feeding standards.**
- 12. Vit A, D<sub>3</sub>, K, E, Choline etc. are necessarily added.** In addition to this toxin binder, Antibiotic growth promoters/probiotics, preservatives are also added.

**Problem 1:** Formulate 100 kg **broiler Pre starter (as per BIS 2007)** ration using following feed ingredients/ supplements: Maize, soya Doc (Soybean meal), Rice polish, soybean oil , Di-calcium phosphate (DCP), Lime Stone Powder (LSP), Synthetic Lysine, Methionine, Trace mineral & vitamin mixture and other feed additives.

Nutrient Requirement Broilers (BIS, 2007)	CP	ME	Ca	Available P	Lysine	Methionine	CF
	%	Kcal/Kg	%	%	%	%	%
Pre starter	23	3000	1.0	0.45	1.3	0.50	5.0
Starter	22	3100	1.0	0.45	1.2	0.50	5.0
Finisher	20	3200	1.0	0.45	1.0	0.45	5.0

### Chemical composition of feed ingredients/ supplements

Feed ingredient/ supplement	DM %	CP %	EE %	CF %	ME Kcal/kg	Ca %	P %	Lysine %	Methio-nine %
Maize	89	9.00	3.80	2.2	3340	0.02	0.28	0.22	0.18
Soybean meal	89	45.0	0.80	6.6	2300	0.29	0.65	2.70	0.65
Rice polish	90	12.0	15.1	8.0	3300	0.08	1.30	0.50	0.22
Soy. oil	-	-	-	-	8000	-	-	-	-
DCP	-	-	-	-	-	21.0	18.5	-	-
LSP	-	-	-	-	-	36.0	-	-	-
Lysine	-	-	-	-	-	-	-	100	--
Methionine	-	-	-	-	-	-	-	-	100

**Step 1:** leave slack space: **03 kg**

**Step 2:** Fix level of cereal by-products i.e. Rice polish **10 kg**

**Step 3:** Fix level of soybean oil **05 kg**

**Total Quantity fixed** 18 kg

Now calculate CP supply from above quantity **CP (kg)**

Slack space: 03 kg ..... 0.00

Soybean oil 5 kg = 0.00

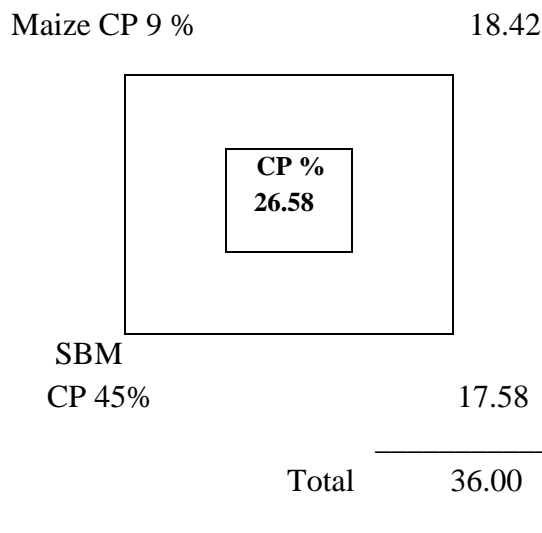
Rice polish (if CP value is 12.0 %)10 kg – 12.00/100x10 =1.20

1.20

CP required to be supplemented through 82 kg [(100 (qty. to be prepared) - 18 kg (qty. already fixed))] is 21.80 kg [23 (required CP) – 1.20 (CP supplied by qty. of ingredients fixed)]

Therefore CP desired in percentage will be  $21.80/82 \times 100 = 26.58\%$

**Step 4: Calculate proportion of Energy feed and Vegetable protein through Pearson square method**



Proportion of maize in the remaining quantity (82 kg) =  $18.42/36 \times 82 = 41.96$  kg (42)

Proportion of SBM in the remaining quantity (82 kg) =  $17.58/36 \times 82 = 40.04$  kg (40)

Ingredients	Qty (kg)	CP %	ME Kcal/kg	Av. P %	Ca %	Ly %	Me %	CF %
<b>NR Pre starter (BIS 2007)</b>	-	<b>23</b>	<b>3000</b>	<b>0.45</b>	<b>1.0</b>	<b>1.3</b>	<b>0.5</b>	<b>5.0</b>
Rice polish	10.00	01.20	330					
Soya oil	5.00	-	400					
Maize	42.00	03.78	1403					
Soybean meal	40.00	18.00	920					
DCP, LSP, Syn. Lysine, Methionone, TM +Vit+ other additives	3.00							
<b>Total</b>	<b>100.0</b>	<b>22.98</b>	<b>3053</b>					

**Note: Similarly, by following above steps, you can formulate rations for broiler starter and finisher. Final results are given below :-**

Ingredients	Qty (kg)	CP %	ME Kcal/kg	Av. P %	Ca %	Ly %	Me %	CF %
<b>NR starter (BIS 2007)</b>	<b>-</b>	<b>22</b>	<b>3100</b>	<b>0.45</b>	<b>1.0</b>	<b>1.2</b>	<b>0.5</b>	<b>5.0</b>
Rice polish	10.00	01.20	330					
Soya oil	6.00	-	480					
Maize	43.47	03.91	1452					
Soybean meal	37.53	16.89	863					
DCP, LSP, Syn. Lysine, Methionone, TM +Vit+ other additives	3.00							
<b>Total</b>	<b>100.0</b>	<b>22.00</b>	<b>3125</b>					

Ingredients	Qty (kg)	CP %	ME Kcal/kg	Av. P %	Ca %	Ly %	Me %	CF %
<b>NR finisher (BIS 2007)</b>	<b>-</b>	<b>20</b>	<b>3200</b>	<b>0.45</b>	<b>1.0</b>	<b>1.0</b>	<b>0.45</b>	<b>5.0</b>
Rice polish	10.00	01.20	330					
Soya oil	7.00	-	560					
Maize	47.78	04.30	1596					
Soybean meal	32.22	14.50	741					
DCP, LSP, Syn. Lysine, Methionone, TM +Vit+ other additives	3.00							
<b>Total</b>	<b>100.0</b>	<b>20.00</b>	<b>3227</b>					

**Note: 1. Also calculate supply of Available P, Ca, Lysine, Methionine and balance these accordingly by use of appropriate supplements, as done earlier for BIS (1992).**

**2. Layer feeds like feeds for Chick, grower and layer phase I and II can be formulated by using same steps and feed stuffs utilized in ration formulation as per BIS (1992).**