Preparation of Diets Using the Substitution and Replacement Method

Ingredients

Feed Additives

Vitamins, Minerals, Growth Promoters, Amino acids, Anti mold, Anti bacterial, Anti oxidant, anti coccidian and others

Major Minerals

MCP, DCP, Limestone, Salt, Sodium bicarbonate

Energy Sources (Cereals and oil)

Corn, Wheat, Wheat bran Oil

Protein Sources

Soybean meal Sunflower meal Fish meal
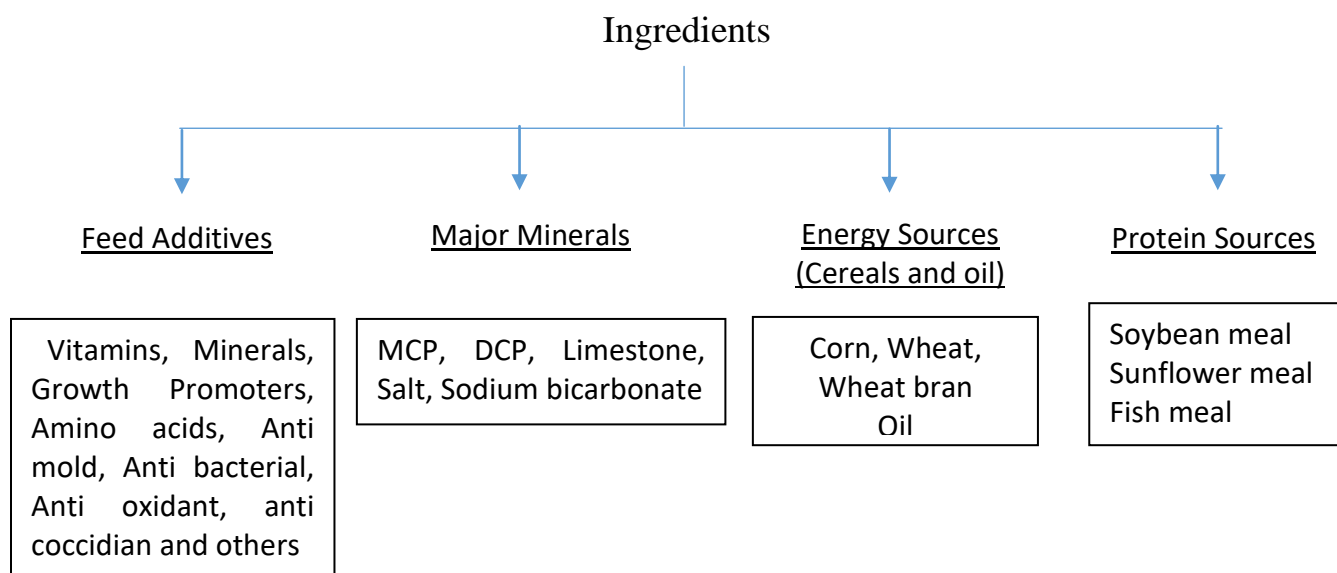
- For prepare a ton of feed for broiler chick containing 19% protein 3200 kcal/kg energy, 1% calcium, 0.4% phosphorus, 0.2% sodium, 1.09% Lysine should be have the following information:
  1. You must know the protein and energy content for ingredients
  2. You must know the Specification of used premix and feed additives

Ingredient Nutritional Value

Ingredient	Protein %	Energy Kcal/kg	Ca %	P %	Na %	CL	Lysine	Price
Soybean meal	46 %	2300	0.27	0.22	0.02	0.05	2.96	
Corn	9 %	3350	0.02	0.08	0.02	0.04	0.23	
Wheat	13 %	3300	0.05	0.13	0.04	0.05	0.37	
Wheat bran	15 %	1600	0.14	0.2	0.05	0.06	0.61	
Flour	12%	3150	0.02	0.09	0.02	0.08	0.3	
Limestone	0	0	34	0	0	0	0	
MCP	0	0	16	23	0	0	0	
Salt	0	0	0	0	39	60	0	
Premix 5%	40 %	2150	5.6	4.65	2.3	4	3.85	
Premix 2.5%	15.98 %	4724	9.2	9.7	6.4	8.18	4.41	
oil	0	9000	0	0	0	0	0	
Lysine	79	4760	0	0	0	0	79	
Sunflower meal	32	1550	0.21	0.14	0.08	0.02	1	
Sodium bicarbonate	0	0	0	0	27	0	0	

1. Calculate The protein , energy , percentage of calcium, phosphorus and sodium add from 50 kg premix, as follow:

Ingredient	Equations	Premix percentage	Needed percentage from other content
Energy	2150*50/1000= 107.5	107.5 Kcal/kg	3100-107.5 = 2992.5
Protein	40*50/1000= 2	2 %	19 – 2 = 17%
Ca	5.6*50/1000= 0.28	0.28 %	1 – 0.28 = 0.72 %
P	4.65*50/1000= 0.23	0.23 %	0.4 – 0.23 = 0.17%
Na	2.3*50/1000= 0.115	0.115 %	0.2 – 0.115 = 0.085%
Lysine	3.85*50/1000=0.19	0.19%	1.09-0.19=0.9%

2. Complete the shortage from Ca, P, Na by limestone , salt and mono - calcium phosphate (MCP) as follow:

Ingredient	Needed Level	Volume
MCP	1000*0.17/23 = 7.4 kg	7.4 kg
Limestone	1000*0.61/34 = 17.9 kg	17.9 kg
Salt	1000*0.085/39 = 2.18 kg	2.18 kg
Premix	-	50 kg
Feed additives	-	-
Total	-	77.5

3. The remaining amount of feed is 1000-72.8 = 927.2 kg be collected from the sources of protein, Cereals and oil, using the method of substitution and replacement.

Feed specifications

1- Broiler breeder (PS) starter feed: - CP = 19%   ME = 2800 kcal   Lysine = 1.01%
Ca = 1%   Ava. P = 0.45%   Na = 0.16-0.23%

2- Broiler Starter: - CP = 23%   ME = 3000 kcal   Lysine = 1.43%   Ca = 1.05%
Ava. P = 0.5%   Na = 0.16-0.23%

3- Broiler Grower: - CP = 20%   ME = 3150 kcal   Lysine = 1.24%   Ca = 0.9%
Ava. P = 0.45%   Na = 0.16-0.23%

4- Layer Production feed: CP = 15%   ME = 2750 kcal   Lysine = 0.82%

Ca = 3.63%   Ava. P = 0.41%   Na = 0.16%

• For layer and Breeder flocks you can calculate another amino acids like Threonine, Tryptophan, Methionine+cystine (for meth+cyst. You can use methionine preparation)