

Relative Cost Factor” (RCF) to be used, while purchasing feed ingredients

Energy supplements	RCF	Protein supplements	RCF
Maize	1.00	Soya bean meal- 45-48% CP	1.00
Jowar	0.94	Sunflower meal- 25-28% CP	0.55
Pearl millet (bajra)	1.00	Peanut oil meal- 40-44% CP	0.70
Wheat / triticale	0.92	Rapeseed meal- 35-38% CP	0.75
Broke Rice	0.90	Full- fat soya -extruded	1.40
Ragi- finger millet	0.84	Fish meal – 60% CP	1.33
Molasses	0.55	Fish meal-50% CP	1.18
Rice polish - >15% oil	1.10	Fish meal-45% CP	1.10
Rice bran- > 6% oil	0.86	Fish meal- 40% CP	1.00
Deoiled rice bran-DORB	0.58	Meat meal -50-58% CP	1.05
Barley	0.86	Meat-cum-bone meal (MBM)	0.90
Tapioca tuber / flour	0.75	Sesame oil cake- 37-40% CP	0.88
Animal fat	2.00	Coconut / palm cake-22% CP	0.45
Vegetable oil	2.15	Prawn head/ M. shrimp meal	0.54
Tamarind kernel meal	1.15	Corn gluten meal- 45% CP	0.80
Oats /	0.84	Corn gluten meal- 60% CP	1.10
Distillers / brewers dried grain	0.65	Silkworm pupae meal (SE)-60%	0.80
Wheat bran	0.50	Guar meal -42 % CP	0.70
Alfalfa / meal	0.60	Cotton seed meal-38% CP	0.70
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Least cost feed preparation

- Avoid storage of feedstuffs with high moisture
- Make the warehouse rat proof, seepage proof and leak proof, to prevent spoilage of feedstuffs

- Minimize spillage, wastage and dustiness during feed preparation, transport & feeding of birds.
- Service the feed mill periodically, by changing the hammers (beaters), sieve & blades of the mixer.
- Avoiding over filling of feeders and providing sufficient feeder space

Feeding management

- Precision feeding like Split feeding, pellet /crumble feeding, restricted feeding, controlled feeding, phase feeding etc.
- Force-moult the hens during low egg price period, as well as for 2nd year of lay
- Automatic flat chain feeders & tubular feeders used in large farms will supply small quantity continues feed to the birds, with almost NIL wastage.

Restricted feeding

- Restricted feeding during growing period, not only reduce the feed cost but also improve the egg production & livability during laying period.
- This is followed in breeders & can be followed in commercial layers also with high degree of success
- The extent of feed restriction during growing period will be 20-25% of total feed intake. i. e. the birds are fed 75-80% of total feed.
- Even during laying period, the broiler breeders will be fed about 90 % of the total feed intake, to avoid excess fat deposition.

Controlled feeding

- It is a type of mild feed restriction; where the birds are fed with a recommended quantity of feed daily.
- It is mainly followed in broiler breeders; where there is a tendency for over eating.
- It is also carried out in automatic feeding system; where the feed flow is restricted according to the age of the broilers and level of egg production in layers and breeders.
- The feed supply will be stopped after the daily recommended feed is consumed by the birds.

Phase feeding

- The nutrient requirements of all groups of birds are not the same.
- Hence they are fed according to their age, growth rate and level of egg production
- As the age advances, the protein requirement will decrease and the calcium requirement will increase; so that the feed cost can be reduced in older hens.
- Commercial broilers are fed 3 or 4-phase feeding; whereas layers and breeders are fed 2or 3-phase feeding.

Split feeding

- Fast growing broiler hybrids and high laying hybrid layers need relatively lesser quantity of feed per unit growth rate or per dozen eggs
- Give better FCR and greater feed economy.
- Hence always select the best hybrid birds, most suitable for the local agro-climatic conditions.
- Know their exact nutrient requirements and formulate the feed accordingly, for optimal feed efficiency and economy.

Flock Health and general management

- A healthy flock will always give better growth rate, egg production, FCR & lower feed cost per unit production
- The feed consumed by a dead broiler or grower is totally a waste.
- Similarly the feed consumed by a sick bird cannot be utilized properly for growth and egg production.
- Therefore maximum attention must be paid for flock health, by giving a toxin-free balanced feed, sanitized drinking water & do regular vaccination and medication
- For best results and greater feed economy, better farm management is more essential.
- Provide comfortable housing to protect birds from extremes of weather & predators
- Avoid overcrowding & insufficient feeder and water spaces.
- Provide adequate ventilation
- Provide sufficient floor, feeder & waterer spaces
- Avoid feed wastage of all kinds

Reference: Feeding of poultry By B.Panda, V.R.Reddy, V.R Sadagopan and A.K.Shrivastav

Supply

Fertile eggs: Eggs of the backyard poultry/ desi birds is always in a demand. Price of backyard poultry egg is Rs. 84/dozen and eggs of ornamental birds are Rs. 60/ dozen. Fertile eggs of chicken quails and ducks are available at Rs.10/egg, Rs. 1.5/egg and Rs 6/egg respectively. This is available in ICAR-CCARI and can be procure in all the working days.

Chicks: The price of a day-old back yard poultry chicks vary with breeds. Improved varieties costs Rs. 20/ chick and Rs.10 is added up in every week till 8th week of age whereas for Kadaknath it is Rs. 40/chick in the 0th day and Rs. 5 is added up in every week till 8th week of age. Duckling and quails are also available.

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Economic feeding of Backyard poultry
 Under STC funded

Introduction

Feed is the single largest item of expenditure compounding 60-70% of total cost in poultry production. Feed cost is escalating at a disproportionate rate, compared to the market cost of eggs and broilers; resulting in losses. Several feed ingredients are mixed together to provide well balanced nutrients in the diet at levels required by the birds at a reasonable price. Some feed ingredients are employed for providing only a particular nutrient, while others provide more than one nutrient. For example: Limestone is employed only to provide calcium in the diet, while cereal grains are employed mainly to provide energy as well as protein, minerals and vitamins. No feed ingredient is compulsory to meet the nutrient requirement of birds. Hence Economic feeding is essential, to reduce the feed cost, without affecting their performance.

Feed Ingredients

Commonly available feed resources are classified as energy supplements, protein supplements, mineral and vitamin supplements. Energy supplements constitute 60-70% of poultry feed, provides bulk and satiety. They may further be divided into high energy like maize, wheat, sorghum, broken rice, fats/oils and low energy stuffs like pearl millet/other millets, rice polish/bran, molasses/tapioca flour.

Ingredient	Broilers and layers chicks	Growers and layers	Remarks
Energy supplements	Inclusion Level		
Bajra	30	70	May increase fat content in the body
Barley	10	20	Add non-starch hydrolyzing enzymes (beta-glucanase)
Fats/oils	5	5	Unsaturated fats are advantageous in minimizing ill effects of aflatoxin
Jowar	30	50	Sorghum. Tannin may increase protein requirement of the diet
Maize	60	60	Broken grain susceptible for mycotoxin, high moisture during harvesting period
Mango kernel	3	5	High in tannin
Molasses	2	5	Good in low density feeds also in summer.
Dried Poultry manure	0	10	Drying is expensive pathogen problem
Ragi	10	30	Finger millet, increase lean meat content

Rice bran	10	25	Add anti-oxidants during storage and in feed having high proportion of bran
Rice broken	10	20	Quality is not constant, may increase fat deposition
Sal seed	3	6	High in tannin
Tapioca	10	20	Peeling is essential, add molasses to reduce dustiness
Wheat	10	30	Add xylanase to increase arabino-xylans
Wheat bran	0	10	Add bulk to feed
Protein Sources			
Vegetable protein sources			
Ambadi cake	10	20	High fibre
Coconut cake	5	5	Oxidation and mycotoxin contamination
Cotton seed cake	10	10	Fibre and gossypol limit utility. Iron salts may blind gossypol
Groundnut meal	20	30	Mycotoxin is a potential threat, deficient in lysine and methionine
Guar meal	3	5	Roasting is essential
Karanj cake	5	10	Solvent extraction is essential to remove karanjin
Kokum meal	5	10	
Linseed cake	3	5	Linatin, linamirase and mucilage limits utility
Maize gluten meal	20	20	Mycotoxin is threat
Niger cake	5	10	More fibre
Rape seed cake	10	5	Mustard cake, erucic, tannin, glucosinates and argimone contamination threats
Rubber seed cake	0	5	Contains HCL
Safflower	5	10	Very high fibre
Soybean meal	40	30	Deficient in methionine
Sunflower meal	20	30	Can be added as sole protein source when energy and limiting amino acids are balanced
Till cake	15	20	Sesame. High in phytase and oxalates. Good combination with soybean meal

Animal protein sources			
Fish/fish meal	10	10	Pathogens, rancidity (oil fish), salt and high variability in protein content limit its utility
Feather meal	2	2	Poorly digestible protein
Hatchery byproduct meal	2	3	Pathogens and rancidity
Meat and bone meal	5	3	Pathogens, variable protein quality
Meal meal	5	5	Pathogens, variable protein quality
Poultry by-product meal	5	5	Pathogens, low in methionine
Silkworm pupae meal	2	2	Low threonine, rancidity
Squilla meal	5	5	Deficit in lysine, methionine, threonine, tryptophan and arginine

Protein supplements includes both plant and animal protein sources. Plant protein mainly comprises cakes and meals of groundnut, soyabean, cotton seed, mustard, rape seed, sunflower, safflower, cluster bean and maize gluten meal.

Methods To Reduce Feed Cost:

Precision poultry nutrition

- Means Accurate feeding of birds based on their exact nutritional requirements of mostly energy and protein which will improve the FCR and performance of the birds significantly, resulting in considerable reduction in the feed cost.
- Due to precision nutrition, broiler farmers are achieving an FCR of <1.60, with a body weight of >2.20 kg in <40days, with < 5% mortality.
- Similarly, backyard farmers are getting 180-210 eggs /hen/ annum, with an FCR of 2 /dozen eggs.
- Moreover, these standards are showing an annual improvement of 3-5%, due to precision nutrition

Least-cost feed formulation

- Formulate feeds based on their digestible nutrients, instead of gross nutrient levels
- All integrators and big farmers are using feed formulation software for least-cost precision feed formulation by linear programming, to reduce feed cost/Excel based
- Make feed poultry software by CARI
- Use good quality Toxin-free feedstuffs, with known nutritional composition

Large Scale Poultry Operation

- Large Bigger farm needs more feed
- Buy feed ingredients & feed supplements in bulk, which will reduce the feed cost
- Hence have a layer farm, with >100,000 layers Broilers >20,000 /week
- Large size backyard farms with improved varieties of poultry.

Integration in poultry production

- An integrated layer or broiler operator will have several contract farms under his fold.
- The integrator will be having a breeding farm and several contract broiler /layer farms, having millions of birds.
- Hence their feed requirement is huge, more than the large poultry farms; resulting in lower cost of production of feed. They will also have credit facilities.

Use of Alternate feedstuffs

- If conventional feedstuffs like maize, soya and fish are costly /scarce / poor quality, go for alternate feedstuffs like jowar, millets, rice polish, broken rice /wheat, cheaper oil cakes, guar meal,BSF larvae meal, meat-cum-bone meal etc.
- Select alternate feedstuffs, based on their relative cost, quality and availability.
- Multiple energy and protein feedstuffs will not only reduce the feed cost, but also improve the feed quality and reduce the mycotoxin level; compared to maize and soya combination only.

