

POULTRY PRODUCTION AND MANAGEMENT- **THEORY(PART 2)**

B.Sc.(Ag.) 2nd Semester

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Lecture 7: Poultry Nutrition-Feed formulation-composition of chick mash grower, layer, broiler starter and finisher mashes .

Feeding Management

Poultry being simple stomached species, cannot synthesise most of the nutrients required for them and so the nutrients become dietary essentials chicken has to be fed adequate quantities of balanced diet for its growth, livability and to exhibit its genetic potential to the full extent.

Poultry differ from other species of livestock in body temperature and digestion

Biological activity and maturity.

Poultry feed is composed of

60-65% Energy giving materials

30-35% of Protein source

2-8% Minerals source.

And above all water. Which is considered as the Principal nutrient should be pure, whole some, free from physical impurities, toxic substances and Bacterial contamination.

Water : feed ratio 2.2 : 1

It is variable with age, climate, feed and physiological activity. Excess energy is stored as body fat.

Yellow maize

cumbu

cholam

Rice polish.

This energy materials constitute 50% of the ration.

Protein : Protein is required by the bird for

1. Growth 2. Maintenance of body tissues 3. Production.

Both vegetable and animal proteins are used in the feed.

Vegetable Protein :

Ground nut oil cake

Soyabean oil cake

Gingelly oil cake

Sunflower oil cake

Mustard oil cake

This is added at 15-25% in the ration. It is always advisable to add two or more for better balancing.

Animal Protein: Fish meal, meat meal, Blood meal

silk worm pupa meal

out of this fish meal is ideal

this forms -5-10% of the ration.

Grain by products like bran are included from 10-30% for fibre, bowel movement and minerals. If molasses available it can also be added for energy at 5-7% levels, which is a cheap source of energy, reduces dustiness, improves palatability.

Mineral mixture for poultry :

Included at 2.3% It is advisable to use salt free mineral mixture because fish meal available in our country is salted. Calcium supplements such as shell grit, calcite, limestone, etc. are used at 4-5% levels.

Standard requirement of nutrients:

Chick

Grower

layer mash

Broiler starter

Broiler Finisher

Crude Protein % min.

22

16

18

23

20

Crude fibre % max.

7

8

10

6

6

Calcium % min.

1

0.8

2.75

1

1

Total phosphorus % min

0.7

0.6

0.75

0.7

0.7

Metabolizable

Energy K/cal/kg.

2800

2600

2700-

2750

2800

2900

Lysine (%min.)

1.0
0.7
0.5
1.0
1.0
Methionine (% min) 0.35
0.35
0.25
0.25
0.35
Approximate feed intake by commercial chicken in tropics
Egg type (gm.)
Broiler (G.)
1st week
10
15
2nd week
15
25
3rd week
20
35
4th week
25
50
5th week
30
65
6th week 35
85
7th week
45
105
8th week
50
120
9-12 weeks – 40
13-16 weeks – 50 Restricted feeding
17-20 weeks – 60
During laying
0% Egg Production
80 gm. 70 % 115
25% Egg Production
95 gm.
80 %
120

50% Egg Production

105gm.

Over 80%

12

60% Egg Production

110 gm.

Guide lines for feed management

1. Purchase quality ingredients / feed. with least moisture and devoid of adulteration.
 2. If own feed is mixed formula may be modified depending upon the cost and availability of ingredients
 3. If agricultural farm is attached farm grown grain can be used
 4. Purchase one month or two months requirements.
 5. Screen the feed store room against rodents, sparrows other vermins.
 6. Observe the feed intake by the birds during summer, winter.
 7. If moisture level exceeds 15% (except molasses) during hot season it may cause growth of fungus and precipitate problems like aflatoxicosis.
- The feeder should not to filled to full to minimize the feed wastage..

Lecture 8: Feed Conversion Ratio / dozen eggs or kilogram of meat. Marketing channels in poultry-Integration.

Egg marketing : The wholesale trade of eggs in big cities, where potential demand exists, is in the hands of a few traders who have monopolized this trade for their own advantages. Egg prices vary from one market to another and from one season to another. In summer, the egg prices crash down to a level which is sometimes less than the cost of production, even though the retail price does not vary proportionately. Therefore proper attention has to be given to the problem of most efficient disposal of market eggs.

Distribution channel.

The eggs are distributed through different channels, viz. producers to consumers, producers via retailers to consumers, producers via assemblers to consumers, wholesalers, trailers to consumers, and producers to consumers via co-op societies/egg marketing organizations. Eggs should be distributed through relatively shorter channels to speed up supply and avoid delay and repeated handling.

Marketing agencies.

Marketing of eggs is primarily handled by traders and commission agents. The NAFED regulates price stabilization activities. The NECC nowadays plays very important role in stabilizing egg prices.

Local Urban

Farm

Government

Farm

Backyard Farm Country side farms

Egg Marketing

organization

Whole sale

distributor

Cold Storage Sub dealer Retailer Consumer

Commission

Agent

MARKETING OF BROILERS

Marketing plays a vital role in overall development of any economic unit, since marketing consists of the performance of business activities that direct the flow of goods and services from the producer to the consumer or user for the transfer of title of the ownership of goods. In broiler marketing, the producers/farmers and buyer are brought together.

Market is a place wherein the exchange of goods or the change of title of goods takes place.

Broiler marketing Covers the job of

1. assembling of birds from the area of production
2. converting them into cut that are in demand by the final consumers and
3. placing these products in the hands of such at the desired place, at the right time and in quality.

Thus the marketing of broilers includes all the intermediaries from the producer to the final consumer in the channel of marketing.

The large farms which had their own retail outlets, made more profit due to better sale price per kilogram live weight

MARKETING INTERMEDIARIES

These retailers sell broiler and layer chicken regularly either as fresh or frozen depending on the facilities and demand from the consumers. These retailers also stock other animal products in addition to chicken products. Many retailers have slaughtering facilities at their premises. Some retailers

with a margin. The higher income and middle income groups of consumers

Marketing Intermediaries are institutions that facilitate flow of goods and services between poultry industry and its final market. They include wholesaler, agents (brokers), transporting companies, warehouses and retailers.

CURRENT MARKETING SYSTEM

At present, broilers are marketed through i. Wholesalers ii. Retailers with cold storage (deep freezer facilities), iii. Retailers without cold storage facilities, iv. Chain storage v. Hotels and restaurants

Retailer with cold storage

purchase dressed chicken from wholesalers and sell them after packing

prefer to purchase these frozen /chilled chicken as they are kept in hygienic condition

RETAILER WITHOUT COLD STORAGE FACILITIES.

These retailers mostly purchase live broiler from wholesalers / producers and stock the live birds in their premises. As and when the consumers demand, the live birds are dressed and sold as fresh and remaining birds are kept for subsequent days sale -since most of the consumers of middle and lower middle class people like only fresh chicken rather than frozen or chilled. Now a days these retailers even started selling portion of chicken.

CHAIN STORES

There are many organizations having branches situated at different localities of the same city and different towns ranging from 3 to 6 branches with cold storage facilities. All the branches of each organization are under central ownership and control. It is a compromise between large scale and small scale organizations. The management, purchase, processing and controls are centralized while sales are decentralized and carried out on a small scale. The chain stores obtain their supplies directly from producers instead from wholesalers. They buy in lots and perform the work of wholesalers in respect of transport, warehousing, risk bearing and financing. Chain stores are strictly retailers enterprise to eliminate the wholesalers.

MARKETING CHANNEL

Marketing Channels simply mean the paths or routes through which produce from the producer reach the ultimate destination (consumers). There are five different marketing channels being identified in broiler marketing.

1. Producers----- Wholesaler-----Retailer-----Consumer.
2. Producers----- Wholesaler -----Consumer.
3. Producers-----Chain store -----Consumer.
4. Producers -----Consumer.

The first channel is more commonly observed in all the cities. The wholesaler purchase the live birds

from farm itself on live weight basis and transport in their own transport vehicle and sell to retailers

either live or dressed and the retailer in turn sell the product to consumers. In general live birds are

5. Producer-----Integrator/Commission Agent-----Wholesaler-----Retailer----Consumer.
- preferred over dressed chicken in the city, accordingly large number of live birds are sold to retailers.

The wholesaler take the risk of transport , storage losses due to shrinkage and mortality.

In the second channel retailer procure the birds from the farm and sell to the consumer either dressed or live.

In the fourth channel, the birds are either sold as live or dressed and in this the producer is able to get

100 percent of consumers rupee since there are no intermediary.

The fifth channel, operates mostly outside the state and in the districts where the integration of poultry farming is gaining momentum.

In the third channel , the chain store procure birds from the farm and sell them after processing to consumers.

CONSTRAINTS OF MARKETING

1. Increase cost of feed.
2. Variable quality of poultry feed.
3. Presence of many poultry diseases(Panic sales with low price).
4. Seasonal fluctuation in poultry meat prices.
5. Unorganized market infrastructure.
6. Non-adherence to quality and safety standards(Bio Security Measures).
7. Lack of Vertical integration.
8. Little efforts for manufacturing value added products.
9. Due to unplanned growth in poultry industry, mushroom growth of small hatcheries without adequate hatchery hygienic practices.
10. Unexpected arrival from other states.
11. Chicken meat is more perishable than egg and thus requires an immediate sale.
12. Lack of consumer preference.
13. Transportation of dressed chicken carcasses in refrigerated trucks to marketing centers is costly affair.
14. Defective processing, storage and distribution of dressed carcasses

INTEGRATION IN BROILER INDUSTRIES

An integrated marketing in broiler industry covers all the aspects of production i.e. from breeding to marketing of the final product. Two kinds of integration exist in marketing:

1. Vertical integration: When more than one stages of producing and marketing a poultry product are controlled by the same individual or company ,e.g. A hatchery supplying chicken and marketing the farmer's final product.

2. Horizontal integration: Two or more companies at one level join together to follow a new marketing opportunity.

A completely integrated production and marketing system can also be organized under the management of a grower ; wholesale processing co-operative, hence called cooperative integration.

Poultry industry provides dramatic examples of the integration of farm production and marketing activities. Poultry production itself is a highly integrated operation combining specialized breeding, hatchery, grain farming and feed mixing, packing operations and marketing firms.

There are 3 types of production- marketing integration in poultry industry.

1. Owner Integration: The integration of product and marketing is controlled by an individual or a single firm.,i.e., the facilities for the meat production is under the ownership and the meat are marketed by him to retailer or consumer.

2. Contract marketing: Buyers sets minimum standards for the meat to be produced by the producer. Here the meat producer bears price uncertainties in addition to production cost. But the quality of meat and the time of delivery are specified and assured.

3.Contract production: Here the producer is asked to grow the birds for the specific distributor-under closely supervised conditions and for a guaranteed return, i.e., the integrator supplies inputs like chick, feed, field supervision, etc., and the grower using his sheds, water and labour grows the birds and returns after getting specified amount plus incentive for superior feed conversion efficiency.

MARKETING INTEGRATION IN BROILER

Broiler farming in India is following the path towards integration. The integrator is involved in all the above steps, which may or may not include supply of chicks to independent commercial farmers. In some parts of the country, a trend towards integration on part of dealers has started. The broiler dealer who were already operating at the middle of the above pathway by purchasing grown birds from commercial farms is now going into forward and backward integration.

i.Forward integration : It includes some sophistication in his dressing plant and extending his reach to retail and institutional outlets.

ii. Backward Intrgration : It involves the following steps:

b. Becoming chick agent for the hatchery to supply chicks to farms.

c. Setting up of a feed plant to supply feed to farmers.

d. Setting up of hatchery, purchasing of eggs and producing day old chicks for his farmers.

e. setting up a breeding farm to supply the hatchery

Normally, in broiler industry, the chicken reaches the consumer through : 1. Breeder 2.Hatchery 3.

Commercial growers. 4. Processor 5. Wholesaler and finally 6. Retailer at each step, overheads and

profits are added making retail price very high for the consumer thus losing competitiveness in business .But in the integrated operation, it does not take the profit at each stage into account, but only

from the sale of the end product. Hence, there is an urgent need for integration in the broiler industry.

Advantages:

1. In broiler industry a farmer spends Rs 25 /=- for production of one kg. of meat. While marketing entrusts only to the wholesalers. So the farmer is able to sell his broilers 2 to 5 rupees per kg than the actual market price. But in integrated marketing, the fluctuation in market price and considerable amount of profit to middlemen will not arise.

2. In integrated marketing, a farmer does not involve directly in marketing. So he need not maintain different age groups of birds in his farm. He can rather switch to "All -in-All-out" system of rearing.

Hence, he attains profit as a whole in a single spell itself.

3. As chicks, feed and vaccines and other inputs are provided by the integrator the farmer needs to put only a lesser investment.

4. Variation in consumers' demand and market prices depending upon season will not affect the farmer.

5. Timely attention with respect to the diseases prevention is provided by the integrator himself which reduces loss.

2 Since, the feed is prepared as a lot, production cost of feed is also reduced to the integrator.

a. Setting up his own /contract commercial farm.

6. There is change of shift in broiler units from urban area to rural areas, as the integrated marketing makes the farmers not to trust the wholesaler for the marketing their birds. Moreover, the cost of land and labour are comparatively very cheap in rural areas.

Benefits to Integrators.

1. The chicks produced in hatcheries are better channeled through farmers to market. Further, the hatchery receives the cost of chick from the farmer at a specified period and marketing is well organized.

3. Integrator can decide over the market place of broiler meat as most of the rearing units are in the hands of integrators.

Lecture 9: Classification of Poultry diseases-Viral-Bacterial-Protozoan- causative organisms, symptoms and prevention – Viral diseases – Ranikhet disease – Infectious bursal disease.

Disease and their control.

Disease is defined as the deviation from the normal state of health which may be characterized by impaired body functions, decrease in production, mortality and morbidity

2. Adhere strictly to vaccination programme.

7. P.M. disposal through burial or incineration of the waste and dead.

General Control measures:

1. Buy chicks from reputed disease free companies.

3. Keep the houses dry cool and well ventilated.

4. Rodent and fly proof.
5. Sanitation of litter, feeder and waterer.
6. Follow medication schedules.
8. Earmark areas for specific age group.
9. Screening visitors.
10. Foot baths with sanitizers.
11. All in all out system.
12. Personnel sanitation.

Vaccination

It is correctly pointed out that " Prevention is better than Cure ". Many viral diseases cannot be treated but can be controlled only by preventive vaccination.

1) Routes of administration

Administration through 1) Drinking Water : It is time and labour saving method. Vaccine is reconstituted in cold drinking water along with skim milk powder at the rate of 4 gram per litre of water and used immediately. For example RDV Lasota Vaccine.

2) Intra ocular -Intra nasal instillation.

The vaccine is reconstituted in normal Saline solution. One drop of diluted vaccine is applied to the nostrils or eye. Ex : RDVF . The virus particle gets absorbed in the mucous membrane and immunization is obtained.

3) Spray Vaccine

Spray or mist spraying is done in chick boxes in the hatcheries. Small drops of equal size is sprayed and the boxes are allowed for 10 to 15 minutes for drying. Drying should not be done near light or by hot air.

4) Wing Web puncture method

Fowl pox vaccine is reconstituted in 50% glycerol saline and taken in forked needle and vaccination is done by puncturing through wing web. Care should be taken that muscle, nerve and blood vessels are damaged by the vaccination.

5) Feather Follicle Method

Pigeon pox vaccine is reconstituted with 50% glycerol saline. After plucking of the feather follicles in the internal thigh region, with the help of a glass rod, the vaccine is smeared and rubbed . After 5 days the birds have to be examined for "Takes" . Takes are cellular reaction taking place in the nervous system.

6) Subcutaneous injection

Ranikhet K vaccine is reconstituted with normal saline and 0.5ml is given between two layers of skin in the wing web region without damaging nerves, blood vessels and muscle The vaccine should be protected in ice box during vaccination and should be used within one hour.

S.No.

Age Name of the vaccine

Route of administration

1.

1st day

Marek's Disease vaccine

Subcutaneous injection at Hatchery

2.

7th day

Ranikhet Disease F Strain/Lasota. RD killed.

Eye drop or Nasal drop.0.2 ml S/C.on the same day

3.

14 to 16 days

(II week)

Infectious Bursal disease(live) IBD(killed)

Eye drop 0.2 ml. S / C on the same day

4.

21 to 24 th day

(III week)

Infectious Bronchitis

Eye drop

5.

30 to 35 days

Ranikhet disease-Lasota strain

Eye drop

6.

42 to 45 days

Infectious Bursal disease (live)

Eye drop

7.

56 to 70 days

(8-10 th week)

Ranikhet disease "K" (Mesogenic)

Subcutaneous

8.

84 to 91 days

(12 - 13th week)

Fowl Pox vaccine

Wing web puncture or Intramuscular

9.

91 to 98 days

(13 to 14th week)

Infectious Bronchitis Vaccine

Through Drinking Water

10.

126 to 133 days

Ranikhet disease K" (Mesogenic)

Subcutaneous Injection

11.

After peak production , every 8 Weeks

Ranikhet Disease Vaccine "Lasota"

Through Drinking Water

1. Live vaccine and killed vaccine should be administered on the same day by different persons.

2. The IBD vaccine should be administered only in the out break area.

3. In the pullet(nearing egg laying stage)or during out break of Ranikhet disease the

RDVK vaccine should be preferred toLasota strain.

4. Before RDVK vaccination the birds should be dewormed.

Debeaking

It is recommended to debeak the layer birds to control feather pecking and cannibalism, bullying. It is carried out by means of electrocautery. It is important to remove only one third of the upper beak taking care to avoid tongue. It is usually practiced at the age of 10-14 days and repeated at the age of 14-16 weeks. Debeaking should never be done with penknife.

Overcrowding, inadequate space for standing/ feeding/ watering and resting, starvation, external wounds, less fiber diet and deficiency of vitamins and minerals may pre dispose the birds to cannibalism.

Procedure

The bird has to be restrained by holding wings and legs by left hand and the tongue is pushed backwards by opening mouth and introducing index finger so that the tongue is not cut. The upper beak is cut to 1/3rd of its length and the lower beak is slightly trimmed. After debeaking vitamins and antibiotics are to be administered for 3-5 days to avoid stress and secondary infections.

Deworming

Is the process of removing worms from digestive tract of the birds. The tapeworm passes segments and is consumed by intermediate host (earthworm, cockroach) where intermediate stage get developed and passed out, which in turn is consumed by host. The eggs or ova of round worms are passed in the droppings which is picked by other birds directly or indirectly with the help of chance carriers (personnel, insects, flies, ants, etc). Sometimes wild birds such as crows may serve as source of infestation.

Birds show the following symptoms when they are infested with worms

- 1 Dullness- weakness, emaciation
- 2 Paralysis-due to toxins produced from worms
- 3 Enteritis-diarrhea with blood
- 4 Anemia-due to sucking of blood by worms.
- 5 Drop in egg production.

If infestation is on a larger scale there may be mechanical block of intestinal lumen and some times rupture occurs. This may also result due to intestinal stasis of food particles.

Deworming is practiced at intervals of 45 days in layer birds and also before RDVK vaccination.

Deworming is done against tape worms only on absolute necessity.

Delicing

Is the process of removing of external parasites like ticks, mites and fleas which suck the blood from the bird. The following symptoms are observed during external parasitic infestation: itching, restlessness, external wounds, loss of body weight, weakness, anemia and drop in production.

Procedure

The dipping of the birds in sunny days has to be done with the following chemicals to remove the external parasites.

1. sumathion or malathion -5ml in 100ml of water. The bird has to be immersed in the chemical solution avoiding eye and mouth. The dipped one has to be dried in a separate enclosure. The feeders, waterers and building should be sprayed with this chemical solution to remove the external parasites. After dipping, to relieve stress to the bird vitamin A, B complex has to be given to improve the health of the birds.

Ranikhet Disease – New Castle Disease

Virus- Para myxo viridae

Very important disease affecting poultry

rainy season in India has been found to be more favourable for the occurrence and spread of the disease. In native fowls this disease occurs in summer.

Peracute- without symptoms and sudden death

In a typical outbreak depression is observed, characterised by prostration, closed eyes, drooping wings and loss of appetite.

There is usually greenish or yellowish diarrhoea.

sometimes in neural form there may be twitching of neck, incoordination or even paralysis. Egg production drops and sometimes-soft shelled or shell less eggs may be laid. Respiratory distress may be observed.

Prevention and control: chicks should be vaccinated with F strain or lasota strain on the first day or within 5 days after hatch and with a booster dose at 8-10 weeks. RDVK strain is usually administered at 8 weeks of age. In layer flocks, booster dose of Ranikhet vaccine is given every 2 months.

Infectious bursal disease: Gumboro disease

-Highly contagious

IBD virus

Bursa is affected- Immuno suppression- humoral antibodies production affected

Usually chicks of 2-6 weeks old affected

Symptoms- whitish diarrhoea, vent pasting, unsteady gait, tremors,

Prevention – Vaccination at 2nd & 3rd weeks of age

Lecture 10: Bacterial diseases-E.coli-Coryza-Salmonellosis-Protozoan-Coccidiosis-casulative organism – symptoms and preventive measures. Nutritional deficiency diseases and its control.

Bacterial Diseases

Coli Bacillosis

Escherchia coli infection

Aggravated by other stress factors

Symptoms- Diarrhoea, swelling of joints, comb, and wattle.

mortality – very high

Prevention- Proper sanitation and management, avoiding stress

addition of antibacterials and anti biotics in feed and water

Infectious coryza

Haemophilus gallinarum

Symptoms- all ages – affected, Acute respiratory infection, high morbidity and low mortality, odema of face, wattle and comb, discharge from nostrils

Recovered birds – carriers

Prevention and control- Better hygiene, Addition of Anti bacterials and antibiotics – Sulpha in feed, Tylosin, tetracycline

Salmonellosis

Paratyphoid, Pullorum

visceral organs –affected

S.pullorum- pullorum disease

, *S. gallinarum*-typhoid/bacillary white diarrhoea

, *S.typhimurium*- paratyphoid

Symptoms- Chalk like diarrhoea, huddling, weight loss, pasted vent.

Treatment: Sulpha drugs, Hygienic management, hatchery hygiene is important.

PROTOZOAN

Coccidiosis:

Eimeria tenella, E.necatrix

Severe upto 10 weeks of age, due to poor litter management, bloody droppings, high mortality, production performance is hampered

Prevention and control: Anti coccidials, litter management and hygiene.

Amprolium, sulpha drugs. Coccidiostats may be mixed with feed.

Nutritional Deficiencies and control:

Vitamin:

Vit A: Xerophthalmia- Gout, - retarded growth, discharge from eyes and nose. – Cod liver, fish liver oil, vit A supplementation

Vit D3: Rickettsia, - leg weakness, swollen hock joints, rubbery beak, thin shelled eggs.- Cod liver, fish liver oil, vit D3 supplementation

Vit E: Encephalomalacia- crazy chick disease – paralysis of leg – retraction of head, convulsions, death- vegetable oils, synthetic Vit E.

Vit B1: Thiamine – poly neuritis – paralysis of wing and neck.- yeast products, synthetic vit B1

Vit B2- Riboflavin – curled toe paralysis- tendency to walk on hocks – dermatitis on corners of mouth, vent and foot pads – fish products, Vit B2, rice bran.

Vit B12- Cyanacobalamine- retarded growth, increased mortality, drop in production and hatchability- fish meal, meat meal, synthetic B12.

Choline – Fatty liver syndrome- poor feed utilization, ruffled feathers, increase in liver fat, -fish, meat, ground nut meal.

Mineral deficiency:

Manganese: slipped tendon – deformity of hock joints – fish, meat meal

Goose stepping – Zinc,magnesium deficiency – bone formation affected.

Calcium, Phosphorous: def of vit D, deficiency during laying- imbalance in Calcium and Phosphorous- poor eg shell formation, curved beak, bone deformities.- supplementation with ca and p.

External And internal parasites; Lice , ticks and mites- deticking, delicing round worm, tape worm infestation – deworming regularly.