

LAYER FARMING

DEPARTMENT OF ANIMAL HUSBANDRY,
LIVESTOCK, FISHERIES
&
VETERINARY SERVICES
GOVERNMENT OF SIKKIM



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COMMERCIAL LAYER FARMING

A layer is a commercially viable egg producing bird. Egg is in great demand because of its nutritive value, easy and quick preparation time and as co-ingredient in wide variety of preparation (house-hold and commercial). Hence layer farming has gained importance as the fastest growing industry in livestock sector.

BREED:

1. Commercial Layer Breed:



a. White Leghorn

b. Kalinga Brown

c. Cari Gold

d. Coloured Layer

2. Dual Purpose breed: a. Kuroiler Dual



b. Rhode Island Red

c. Vanaraja

HOUSING & MANAGEMENT OF LAYERS

A comfortable, easy to clean and manage, providing sufficient area for the comfort of the bird is essential requisite for getting optimum growth and production in layer farming.

Location of Poultry House:

- 1) Away from residential or crowded areas.
- 2) Accessible to the market for eggs and availability of poultry feeds.
- 3) Well connected with roads for transportation.
- 4) Provision of electricity and clean water.

Requirement of a good housing

- 1) Well ventilated house.
- 2) House built in east to west direction along the long axis of the house for natural light and sun rays.
- 3) Temperature 20°-25° C.
- 4) Floor Concrete, rain proof, crack-free, rat-proof and easy to clean.
- 5) Roof- should be moist proof, and common roofing materials may be asbestos, fibre sheet, thatch/chitra etc.
- 6) Light- Daylight desirable.
- 7) Sanitation Ease in cleaning and spraying disinfectants / sanitisers.
- 8) Height of the house 3 mts from the foundation to the roof.

Systems of Housing

A. Intensive system (commercial) of housing includes:

1) Cage system:



2) Deep litter system: Covering of floor with litter materials like saw-dust, rice-husk, chopped wheat straw (Depending upon the availability).



For building a Low cost housing system, locally available material like bamboo and mud (for walls) can be used .For layers, cages made out of bamboo can be made to house the bird

B. Back-Yard



MANAGEMENT

Brooding: is the caring of the chicks from day old till 8 weeks of age. It is done in order to prevent chick mortality and achieve maximum growth by providing warmth to the chicks.

Natural Brooding:

Under normal condition, the mother hen provides the chicks with the warmth of the body and looks after the feeding too.

Artificial Brooding:

Under artificial brooding, a temperature controlled artificial brooder is used in place of mother hen.

Following points must be followed when brooding artificially:

BROODING IN DEEP LITTER SYSTEM

Preparation before the arrival of chicks:

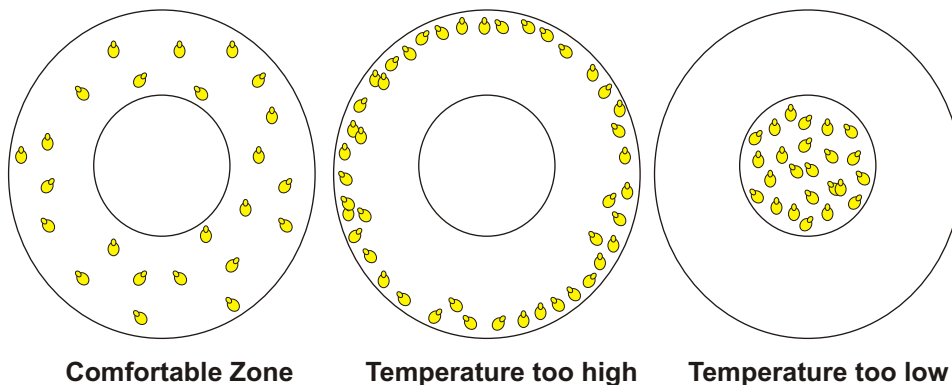
- Sheds should be vacant for at least 3-4 weeks.
- Thoroughly wash and disinfect all the walls , ceilings, floors, crevices and equipments.
- Clean all the water lines and channels.
- White wash the walls of the house.
- Set heating system 90°-95° F in floor brooding.
- Brooder should be provided in circular fashion.
- Provide clean litter material(2-4 inches deep) inside the brooder guard.

MANAGEMENT OF CHICKS IN THE BROODER (0-8WKS)

- Provide 6 sq inches per chicks under the brooder.
- Brooding should be started at 95° F temperature and be reduced by 5° F every week until 70°F is attained.
- De-beaking may be done at 3rd week of age.
- Provide continuous light during brooding period.
- Provision of clean fresh water.
- Daily inspect the condition of birds for any abnormalities.
- Height of the feeder should be adjusted to the convenience of the chicks.
- Keep a standby in case of emergency electricity failure.

Brooding Temperature:

Patterns of chick distribution under electric brooder-



Management of Growers (9-20 weeks)

- Birds should be transferred to grower house at 9 weeks of age.
- Waterer and feeders should be adjusted as per the need of the birds.
- Grower mash should be fed to the birds.
- Keep provision for cross ventilation.
- De-beaking may be done if necessary.
- Vaccinate birds as per schedule.
- Check feed intake and body weight at regular interval.
- Provide light 12 hrs a day.
- Culling of underdeveloped, diseased type of undesirable pullets as early as possible.

Management of Layers (21-72 weeks)

- Ventilation in the layer house should be adequate without drafts.
- Feed layer mash to the birds.
- Provide laying nest/box to the birds, use clean bedding material in the laying nest.
- Replace nesting material at regular intervals.
- Eggs should be collected 3-4 times a day in deep litter system of housing.
- Treatment may be made against external parasites like ticks, mites and lice periodically.
- Remove dead birds promptly and dispose them properly.
- Light should start from 12 hrs a day & increased by 15-30 minutes every week until 16 hrs of light is reached.

FLOOR SPACE REQUIREMENT

	Deep Litter System	Cage System
BROODER HOUSE	0.7 sq ft/bird	0.5 sq ft/bird
GROWER HOUSE	1 sq ft/bird	0.6 sq ft/bird
LAYER HOUSE	2 sq ft/bird	0.7 sq ft/bird

Litter Management:

Total height of the litter should be 5 cms, maintained dry, turned frequently and treated with hydrated lime.



POULTRY FEED

As feed is the major cost of poultry production and which significantly affects the production performance of the birds. So feed and feeding is the most important consideration for efficient poultry farming. Improper feeding not only affects the production performance but also causes several deficiency diseases.

Also, the feed needs to have all the nutrients (carbohydrates, protein, fats, minerals & vitamins) in right proportion. In addition some additives to facilitate digestion and growth is often added in reputed commercial feed.

Estimated Feed consumption of Layers:

FEEDING SCHEDULE OF LAYER BIRDS AT CHUJACHEN LIVESTOCK FARM

Age in weeks	Weight in grams
1st week	Full feed (Adlibitum)
2nd week	Full feed (Adlibitum)
3rd week	35gm/bird/day
4th week	40gm/bird/day
5th week	43gm/bird/day
6th week	46gm/bird/day
7th week	49gm/bird/day
8th week	52gm/bird/day
9th week	55gm/bird/day
10th week	59gm/bird/day
11th week	62gm/bird/day
12th week	65gm/bird/day
13th week	68gm/bird/day
14th week	71gm/bird/day
15th week	74gm/bird/day
16th week	77gm/bird/day
17th week	80gm/bird/day
18th week	85gm/bird/day
19th week	90gm/bird/day
20th week	95gm/bird/day
21st week	108gm/bird/day
22nd week	116gm/bird/day
23rd week	125gm/bird/day

EFFECTIVE MICRO-ORGANISM LIQUID (E.M.)
APPLICATION IN LAYER PRODUCTION

E.M. Is a brown concentrated liquid produced from the cultivation of 80 strains of beneficial micro-organisms collected from natural environment of India.



Advantages of E.M. Technology in Livestock Production:

- *Reduces cost inputs more efficiently.*
- *Improves egg production.*
- *Clean shed, less flies, ticks and less disease incidence.*
- *Maintains better health condition of birds.*

E.M. solution as additive in drinking water on daily basis :

Age of bird(day)	E.M. Solution
01- 14 days	1 ml / litre of water
15 onwards	0.5 ml / litre of water

Caution:

E.M. Solution should not be mixed with anti-biotic, chlorinated water / any disinfectants.

Diseases-Layers are affected by different diseases which may be caused by virus, bacteria ,fungi etc.

Some of the common diseases affecting layers are as follows-

A)Viral-

1)Ranikhet / New Castle Disease

Symptoms:

- i. Affects all the birds of the farm.
- ii. Difficulty in breathing.
- iii.Nasal discharge.
- iv. Anorexia.
- v. Greenish diarrhoea.
- vi. 90-100% mortality.

Prevention: early vaccination with F1 followed by R₂B vaccines.

2)Marek's Disease

Symptoms:

- i. Affects all the birds.
- ii. Droopy wings, lameness, paralysis.
- iii. 60- 70% mortality.

Treatment : *No treatment, only early vaccination.*

B)Bacterial Diseases-

1) Salmonellosis

Symptoms:

- i.Chalky white diarrhoea.
- ii.Pasted vent.
- iii.Depression and loss of weight.
- iv.Sudden death.
- v.Affects all age groups.

Treatment:

- i.Use effective antibiotic (contact nearest veterinary centre).
- ii.Recovered birds act as a source of disease and thus better to cull.

2) Colybacillosis

Symptoms:

- a) Affects all age groups.
- b) Diarrhoea.
- c) Dizziness.
- d) Swelling of joints.
- e) Oedematous comb and wattle.
- f) Mortality rate - 90%.

Treatment:

Antimicrobials (contact nearest veterinary centre).

C)Fungal Diseases-

1) Brooder pneumonia / aspergillosis

Symptoms:

- a) Affects chicks.
- b) High mortality.
- c) Respiratory problem.
- d) Swollen eye and head.

Treatment:

Use antifungal (contact nearest veterinary centre).

D) Helminthic Diseases-

Symptoms:

- a) Affects mostly layer birds.
- b) In appetite.
- c) Poor body growth.
- d) Ruffled feather.
- e) Diarrhoea.

Treatment:

Use anthelmintic every two months (contact nearest veterinary centre).

E) Protozoan Diseases-

1) Coccidiosis

Symptoms:

- a) Decrease in egg production.
- b) Bloody diarrhoea.
- c) High mortality rate.

Treatment:

- 1) Proper management.*
- 2) Use anti-coccidiosis (contact nearest veterinary centre).*

VACCINATION SCHEDULE

Disease	Age
Marek's 1 st day	(generally given inhatchery) 0.2ml s/c
Ranikhet	3-4 th day (f-strain)
Ranikhet	5-6 th wk (f-strain)
Ranikhet	10-12 th wk (R2B)
Fowl Pox	3 rd wk P.P.V.L.
Fowl Pox	8 th wk (P.P.C.E.D.L.)
Gumboro / IBD	15 th -18 th day (on advice by vet)

BIO-SECURITY MEASURES IN A LAYER FARM

Bio-security is a practice designed to prevent the spread of disease onto your farm.

Bio-security has three major components:

1. Isolation.
2. Traffic Control.
3. Sanitation.

Bio-security Measures

- Fencing.
- Keep visitors to a minimum.
- Limit visits to other poultry farms.
- Keep all animals and wild birds out of poultry houses.
- Practice sound rodent and pest control program.
- Inspect flocks daily and recognize disease symptoms.
- Good ventilation and relatively dry litter.
- Keep areas around houses and feed bins clean.
- No exchange of feed and equipments.
- Disinfection and sanitization of poultry house & equipments.

**SCHEME FOR ESTABLISHMENT OF 500 NOS .OF KALINGA BROWN
COMMERCIAL LAYER FARM.**

Sl. No	Particular	Rate	Estimated Cost (in Rs)
A.	Capital Expenditure		
I	Cost of construction one no. of brooder cum rearing shed space size 1'6" per bird a low cost poultry shed with cemented floor size = 800 sqft 26'6"x 30' = 798sqft	Rs90/sqft	71,820.00
II.	Cost of Poultry equipment such as Feeder, waterer, brooder& misc. items	Rs25/bird	12,500.00
III.	Cost of othe expenditure on power, adm.and other unforeseen expenditure	2.50/bird	1,250.00
IV.	Cost of electrification 4 % of civil work of poultry shed		2,872.80
TOTAL			88,442.80
B.	Recurring Expenditure		
	Cost of Day old Kalinga Brown Parent Line Chicks - 500	Rs45/each	22,500.00
	Expenditure on purchase of Feed per Cycle		
	Cost of Chick Mash requirement (0-8week) 2 kg =1,000kg	Rs15/Kg	15,000.00
	Grower mash (9-20 week) 5 kg =2500kg	Rs15/Kg	37,500.00
	Layer mash (21-72 week)= 40kg = 20,000 kg	Rs14/Kg	2,80,000.00
			23500kg
	Cost of Poultry Medicines, Vaccines, Litter and insurance coverage	Rs4.50/bird	2,250.00
	Project Cost		3,57,250.00
	Capital Expenditure 88,442.80		
	(+) Recurring Exp. 3,57,250		
	4,45,692.80		
	Term loan 75% = 3,34,269.60		
	Income Generated Mortality 6% = 30 nos		

RETURNS:

Sl.No	Particular	No. of eggs	Rate	Revenue Received
1.	Total no. of table eggs produced from 470 nos Layers @ 230 eggs/ annum	1,08,100	-	-
a.	Good eggs collected= 80% of total production	86480	Rs.5/ each	43,2400
b.	20% broken eggs collected= 21,620 out of which: 70% Sold= 15,134 30% Discarded 6,486 Average broken eggs/ day 21 nos. (10 months)	15134 6486	Rs.2/ each -	30,268 -
2.	Sale of culled bird 470 nos. at the age of 72 week age, average weight 2 kg 500 gm= 1175kg	-	70/kg	82,250
3.	Gunny bag= 335 nos	-	20.00	6700
4.	Poultry manure from 470 birds	-	1.50	705
				5,52,323.00
	(-) Capital Expenditure A III &IV			4,122.80
				5,48,200.00

(Recurring Expenditure)	3,57,250.00
GROSS PROFIT	1,90,950.20
(Rs 5,48,200.00- Rs 3,57,250.00)	
Net Profit	
Less Depreciation on	
Poultry Shed 10 % 7182.00	
Poultry equipment 15% 1875.00	9,057.00
Net Profit/ bird Rs.363.37p	1,81,893.20

Production Cost of an egg

Calculation Table

Total feed consumed during Laying Period x cost of feed + other input i.e 25% of feed cost	23,500kg x Rs.14.50 = Rs 3,40,750.00 + Rs 85,187.50= Rs 4,25,937.5
Total no. of egg produced/ Annum,	=1,08,100 Nos
Production cost of an egg	=Rs.3.94/egg Or Rs 1.06/egg profit if sold @Rs.5/each

**SCHEME FOR ESTABLISHMENT OF 1000 NOS .OF KALINGA BROWN
COMMERCIAL LAYER FARM.**

Sl.No	Particular	Rate	Estimated Cost (in Rs)
A.	Capital Expenditure		
I	Cost of construction one no. of brooder cum rearing shed space size 1'6" per bird a low cost poultry shed with cemented floor size = 800 sqft 33'3"x30= 99,989 sqft	90/sqft	89,910.00
II.	Cost of Poultry equipment such as Feeder, waterer, brooder& misc. items	25/bird	2,500.00
III.	Cost of othe expenditure on power, adm.and other unforeseen expenditure	2.50/bird	2,500.00
IV.	Cost of electrification 4 % of civil work of poultry shed		3,596.40
TOTAL			1,21,006.40
B.	Recurring Expenditure		
	Cost of Day old Kalinga Brown Parent Line Chicks -1000	45	45,000.00
	Expenditure on purchase of Feed per Cycle		
	Cost of Chick Mash requirement (0-8week) 2 kg /chick= 2,000kg	15	30,000.00
	Grower mash (9-20 week) 5 kg =5,000kg	15	7,500.00
	Layer mash (21-72 week)= 40kg = 40,000 kg	14	5,60,000.00
			47,000kg
	Cost of Poultry Medicines, Vaccines, Litter and insurance coverage	4.50/bird	4,500.00
	Project Cost		7,55,000.00
	Capital Expenditure 1,21,006.40		
	(+) Recurring Exp. 7,55,000.00		
			8,76,000.00
	Term loan 75% = 6,57,004.50		
	Income Generated Mortality 6% = 60 nos		

RETURNS:

Sl.No	Particular	No. of eggs	Rate	Revenue Received
1.	Total no. of table eggs produced 940 nos Layers @ 230 eggs/ annum	2,16,200	-	-
a.	Good eggs collected= 80% of total production	1,72,960	Rs.5	8,64,800
b.	Broken eggs collected= 43,240 nos out of which: 70% Sold= 30,268 nos 30% Discarded 6,486 Average broken eggs/ day 21 nos. (10 months)	30,268 12,972	2.00	60,536
2.	Sale of culled bird 940 nos. at the age of 72 week age, average weight 2 kg 500 gm= 2350kg	-	70/kg	1,64,500.00
3.	Gunny bag= 671nos 85%= 570 bags	-	20.00	11,400.00
4.	Poultry manure from 940 birds	-	1.50	1,410.00
				11,02,646.00
	(-) Capital Expenditure A III &IV			6,196.40
				10,96,449.60
	(Recurring Expenditure)			7,55,000.00
	GROSS PROFIT			3,41,449.60
	Net Profit			
	Less Depreciation on			
	Poultry Shed 10 % 8991			
	Poultry equipment 15% 3750			12,741.00
	Net Profit/ bird Rs.381.94p			3,28,708.60

(Recurring Expenditure)	7,55,000.00
GROSS PROFIT	3,41,449.60
Net Profit	
Less Depreciation on	
Poultry Shed 10 % 8991	
Poultry equipment 15% 3750	12,741.00
Net Profit/ bird Rs.381.94p	3,82,708.60

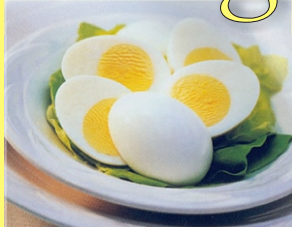
Production Cost of an egg**Calculation Table**










Total feed consumed during Laying Period x cost of feed + other input i.e 25% of feed cost	47000kgX Rs.14X15 =Rs6,81,500 +Rs1,70,375=Rs 8,51,875 -2,16,200
Total no. of egg produced/ Annum,	2,16,200
Production cost of an egg	=Rs3.94/egg Or Rs 1.06/egg profit if sold@ Rs 5/each

**COMPARITIVE INCOME STATEMENT BETWEEN
A GOVERNMENT SERVANT AND A POULTRY FARMER**

Sl. No	Employed Lowest Gazetted Officer Income per Annum	Self Employed Farmer Income per Annum
1.	Rs, 3,67,608/-	<u>1000 birds</u> Rs, 3,28,708.60/-
2.	Age limit on for 58 yrs.	No Age limit.
3.	Single Employment and Time constraint (10 Am- 4 Pm).	Other members of the family can also be engaged/provide employment to others.
4.	Sikkim Government Service Conduct rule is applicable.	Conduct rule not applicable.
5.	Earning Limited.	Earning not limited.
6.	No other activities like entrepreneurship for income generation.	Can pick up other activities simultaneously for added income.

Advantages of Eggs



-  Eggs have best quality of protein with almost all essential amino acids required for our body.
-  Eggs contain almost all vitamins like Vitamin "A" which is essential for good eye sight and vitamin "D" for calcium absorption to give strong and healthy bones.
-  Eggs contain various minerals including Iodine for proper Thyroid Functioning.
-  We get Iron from the eggs which help produce Haemoglobin in our body.
-  Egg yolk prevents age related macular degeneration and deterioration of eye sight.
-  Eggs contain antioxidants like lutein and Zeaxanthin which helps in reducing the risk of cataract.
-  Research tells that regular intake of eggs among the teenage girls prevent breast cancer in latter age.
-  Leucine (Amino acid) content of the eggs helps burn fat faster and reduce muscle loss to keep one slim and fit.
-  Eggs contain choline which helps improve memory.

