Poultry Layer Farming

1. Why do poultry farming for eggs?

Poultry egg and meat are important sources of high quality proteins, minerals and vitamins to balance the human diet. Specially developed breeds of egg type chicken are now available with an ability of quick growth and high feed conversion efficiency. Depending on the farm-size, layer (for eggs) farming can be main source of family income or can provide subsidiary income and gainful employment to farmers throughout the year. Poultry manure has high fertilizer value and can be used for increasing yield of all crops.

2. Scope for Layer farming and its National Importance

India has made considerable progress in egg production in the last three decades. High quality chicks, equipments, vaccines and medicines are available. Technically and professionally competent guidance is available to the farmers. The management practices have improved and disease and mortality incidences are much reduced. Many institutions are providing training to entrepreneurs. The improved layer population has increased from 35 million in 1961 to 115 million in 1996. The egg production in the same period has increased from 2,340 million to 34380 million. The egg production registered compound growth rate of 6.83% during eighth plan period (1992-97). The per capita egg availability at present is 41 eggs; while as per ICMR recommendations about 182 eggs per person per year are required to balance the common vegetarian diet. Increasing assistance from the Central/State governments and poultry corporations is being given to create infrastructural facilities so that new entrepreneurs take up this business. Layer farming has been given considerable importance in the national policy and has a good scope for further development.

3. Financial assistance available from banks/NABARD

3.1 NABARD is an apex institution for all matters relating to policy, planning and operations in the field of agricultural credit. It serves as an apex refinancing agency for the institutions providing investment and production credit. It promotes development through formulation and appraisal of projects through a well organised Technical Service Department at the Head Office and Technical Cells at each of the Regional Offices.

3.2 Loan from banks with refinance facility from NABARD is available for starting poultry farming. For obtaining bank loan the farmers should apply to the nearest branch of a Commercial or Cooperative or Regional Rural Banks in their area in the prescribed application forms which is available in the branches of financing banks. The technical officers attached to or the manager of the bank can help/give guidance to the farmers in preparing the project report to obtain bank loan.

3.3 For poultry farming schemes with very large outlays, detailed reports will have to be prepared. Banks provide financial assistance for the following purposes :

a.For construction of brooder/grower and layer sheds, feed store, quarters etc.

b.For purchase of poultry equipment such as feeders, waterers, brooders etc.

c.For creating infrastructure items for supply of electricity, feed, water etc.

d.For purchase of day old chicks or ready to lay pullets.

e.For meeting working capital requirement in respect of feed, medicines and veterinary aid etc. for the first 5 to 6 months (i.e. till the stage of income generation).

The Cost of land is not considered for loan. However, if land is purchased for establishing a poultry farm, land cost can be treated as party's margin upto a maximum of 10% of total cost of project.

4. Scheme formulation for bank loan

4.1 A scheme can be prepared by the beneficiary after consulting local technical persons of State Veterinary department, poultry corporation or private commercial hatcheries. If possible, they should also visit the progressive layer farms in the area and discuss the profitability of farming. A good practical training and experience on a layer farm will be highly desirable, before starting a farm. A regular and constant demand for eggs and nearness of the farm to the market should be ensured.

4.2 The scheme should include information on land, water and electricity facility, marketing aspects, training facilities and experience of entrepreneurs and the type of assistance available from State government, poultry corporation, local hatcheries. It should also include data on proposed capacity of the farm, total cost of the project, margin money to be provided by the beneficiary, requirement of bank loan, estimated annual expenditure, income and profit and the period for repayment of loan and interest. A format developed for formulation of layer poultry scheme is given in Annexure -I.

5. Requirements of a Good Project

After the scheme is submitted to the bank it is examined for technical feasibility and economic viability.

A. Technical Feasibility : This would briefly include :-

a.Suitability of climate and potentiality of the area

b. Availability of inputs such as chicks, feed, medicines etc.

c.Technical norms

d. Infrastructrure available for veterinary aid, marketing, training and experience of the beneficiary.

B. Financial Viability : This would briefly include :-

a.Unit cost and loan requirement.

b.Input costs for chicks, feed, veterinary aid, labour and other overheads.

c. Output costs i.e. sale of eggs, culled birds, for meat, manure, empty gunny bags etc.

d.Income-expenditure statement and annual gross surplus.

e.Cash flow analysis.

f.Repayment schedule i.e. repayment of principal loan amount and interest.

Other documents such as loan application forms, security aspects, margin money requirement etc. are also examined. A field visit to scheme area is undertaken for conducting techno economic feasibility study for appraisal of the scheme. The model economics of layer farming unit of 1500 birds is given in annexures IIa to IIf.

6. Sanction of Bank loan and its disbursement

After ensuring technical feasibility and financial viability the scheme is sanctioned by the bank. The loan is disbursed in kind in 2 or 3 stages against the creation of specific assets such as construction of sheds, purchase of equipment and machinery, recurring cost during growing period on purchase of chicks, feed, medicines and vaccines, electricity and water, labour expenses etc. For first cycle. Constant follow up and supervision of the scheme is done by the bank.

7. Lending terms - general

7.1 Unit cost

Each Regional Office (RO) of NABARD has constituted a State Level Unit Cost Committee under the Chairmanship of RO in charges and with the members from developmental agencies, commercial banks and cooperative banks to review the unit cost of various investments once in six months. The same is circulated among the banks for their guidance. These costs are only indicative in nature and banks are free to finance any amount depending upon the quality of investment.

7.2 Margin Money:

NABARD has defined farmers into three different categories and where subsidy is not available the minimum down payment as shown below is collected from the beneficiaries

Sr. No.	Category of Farmer	Beneficiary's contribution %
a)	Small farmers	5
b)	Medium farmers	10
c)	Large farmers	15

7.3 Interest Rate for ultimate borrower :

Banks are free to decide the rates of interest within the overall guidelines . However, for working out the financial viability and bankability of the model projects we have assumed the rate of interest as 12 % p.a.

7**.4 Security**

Security will be as per NABARD/RBI guidelines issued from time to time.

7.5 Repayment period of loan

Repayment period depends upon the gross surplus in the scheme. The loan will be repaid in suitable monthly/quarterly instalments usually within a period of seven to eight years with first year as grace period.

7.6 Insurance

The birds and other assets (poultry sheds, equipments) may be insured. Wherever necessary the risk/mortality fund may be considered in view of insurance.

8. Package of Common Management Practices recommended for poultry farmers

Modern and well established scientific practices should be used to obtain maximum economic benefits from poultry farming. Some of the major norms and recommended practices are given below :

Poultry Housing

1.Select well raised land for poultry sheds. Land with hard rock or murram is more suitable. Avoid water logging and flooding near the sheds. Provide separate sheds for growers and layers.

2. Ensure adequate facility for water, electricity, approach road, supply of chicks, feed, veterinary aid and nearness to market for sale of cull birds and eggs.

3.Obtain training/experience in layer farming before starting a farm. You should be prepared to stay on the

farm and have constant supervision.

4.Provide adequate floor space per bird (see details in Annexure III). BIS specifications for construction of poultry sheds are available.

5.Construct sheds in such a way that the end walls face East-West direction and the side walls face North-South direction, so that rain water will not enter the sheds.

6. Provide strong roof and hard flooring. Raise plinth of the shed at least one feet above the outside ground level.

7.Provide 3 to 4 feet overhang of the roof to avoid entry of rainwater inside the shed.

8.Provide at least 50 feet distance between two sheds in the same sector and about 150 ft between growing and laying sector.

9. Provide adequate light and ventilation and comfortable housing conditions during all seasons (cool in summer and warm in winter).

10.Construct sheds in such a way that predators (cats/dogs/snakes) will not enter the shed. Avoid entry of rats by constructing rat proof civil structures.

11.Keep the shed clean and free from flies/mosquitoes etc.

12. After every batch of growers/culled birds is disposed off, the dirty litter material and manure should be removed, walls and floors should be cleaned, white washed with lime and disinfected with 0.5% malathion or DDT insecticide spray.

13.If deep litter system is followed, always use dry and clean litter material (sawdust, paddy husk, etc.). Spread 4" layer of litter on the floor, keep clean/disinfect brooding, feeding and watering equipment and then introduce chicks in the house.

14. The litter material should be always kept loose and dry. Stir the litter twice a week. Any wet litter/droppings etc. should be removed and replaced with fresh/clean dry litter.

15. If cage system is followed, ensure that droppings are spread with lime powder or 10% malathion spray twice a month to prevent menace of flies. The droppings under the cage can be removed after 6 months.

Poultry Equipment

16.Use scientifically designed cages and equipment for brooding, feeding and watering purposes. BIS specifications for equipment are available. A good design can be shown and manufactured locally, so that cost can be reduced.

Chicks

17.Purchase improved strain of one day old healthy egger type chicks from a reputed hatchery. Usually 2-5% extra chicks are supplied.

18.If cages are used for housing of birds ensure proper cage space i.e. half of the recommended floor space on deep litter.

19.Clean, wash and disinfect all equipments with 0.5% malathion spray after every batch of birds is disposed off.

Feeding

20. Use high quality balanced feeds. Starter feed (upto 8 weeks of age), grower feed (9 to 16 weeks of age) and layer feed (17 to 72 weeks of age) manufactured by reputed institutions/companies should be used. BIS feed formulae and specifications are available. With proper knowledge/ experience, the feed can be prepared on the farm. Feed requirements of birds are shown in Annexure IV and V.

21. Store the feed in clean, dry, well ventilated room. A wet feed may bring fungus infection.

22. Use properly designed feeders and control the rats to avoid feed wastage.

23. Provide adequate feeding space per bird. More space is required as the bird grows in age (for details see Annexure-III).

24. Keep proper records on feed consumption per bird for each batch. About 7 kg. feed upto 20 weeks and 38 kg. feed from 21 to 72 weeks of age is required. Excess consumption may be due to feed wastage, rats, low temperature of shed or poor feed quality (low energy feed). Too low feed consumption may be due to disease condition, low quality/unpalatability of feed, high temperature in poultry shed.

Watering of Birds

25.Always give fresh and clean drinking water. Water should be always available at birds.

26.Use properly designed watering equipment. Provide adequate watering space per bird (for details see Annexure - III).

27. Always keep water-pots clean. Avoid birds entering inside pots.

28.Provide cool water during summer. Store the water in tanks that are not exposed to hot sun in summer.

Disease Prevention/Control

28.Clean sanitary conditions of poultry sheds and equipment, balanced feed, fresh clean water, healthy chicks are essential to prevent diseases.

29. Avoid entry of visitors to farm, especially inside the sheds. If visitors come, ask them to dip their feet in a disinfecftant solution, wash and clean hands and to wear apron/boots provided by the farm.

30. Use proper vaccination schedule (for details see Annexure-VI).

31.Use high quality vaccines purchased from reputed manufacturers. Keep vaccines in cool, dry conditions away from sunlight.

32.Any left-over vaccine should be properly disposed off. Vaccines should not be used after their expiry date is over.

33.Any dead bird should be immediately removed from the shed and sent to laboratory for post-mortem examination or buried/burnt suitably away from the poultry sheds.

34. The waste of farm should be suitably disposed off. Different workers should be employed in brooding and laying sheds.

35. Any bird showing advanced signs of a disease, should be removed from the shed and culled. It can be sent to laboratory for diagnosis.

36. Birds showing advanced signs of a disease should be shown to a qualified veterinarian and suitable medication/treatment be given as per his/drug manufacturers recommendations.

37.Poultry manure, if infected, can spread disease, from one batch to another. Keep the litter dry, remove it after flock is sold and dispose the manure properly and quickly.

38.Keep proper records on mortality and its causes and the treatment given to birds. Dates of vaccination for each flock should be properly recorded.

39.Rats are important carriers of poultry disease. Avoid rats. Use suitable rat poisons/rat traps.

40.Many poultry medicines can be given in drinking water. When medication is to be given, remove the waterers in poultry sheds on the previous evening. Next morning give medicine in measured quantity of water, so that entire medicine will be quickly consumed and there will be no wastage of medicines.

41.Mild infection of disease may not cause mortality but it will reduce growth. Keep sample record of body weight for growers, mortality rate and egg production. Study the possible causes, if weight is low or egg production is low and take steps to improve the management of the subsequent batches. A Constant vigil and analysis of records/results is necessary to keep up the efficiency in farming.

42.The guidelines for integrated bio security in poultry production are given in Annexure VII.

Processing/Marketing

43.Ensure the constant and steady demand for eggs is available and the market is nearer to the farm.

44.Study the market demand for particular egg weight. Provide one nest box for every 5 birds. Collect eggs from the shed 4 times a day. Store them in a cool dry place and market them quickly.

45. Birds should not be kept on the farm beyond 18 months of age, as their egg production will go down considerably and their efficiency of feed conversion will reduce progressively as they grow older.

46.If live culled birds are sold after dressing (processing) use clean dressing hall and processing equipment. Dressed birds should be chilled in the ice-cold water for 3-4 hours and excess water removed. Birds should then be packed in clean plastic bags and the mouth of bag sealed.

47.Processed birds should be marketed as early as possible. If they have to be preserved, deep freezing equipment (-10 to -200C) be used. Refrigerated vans may be required for long distance transportation.

15 Pointers for higher egg production

1. Quality Birds

Choose the strain that will perform best and is known to have good livability under reasonable environmental conditions. Good chicks may cost more but they will perform better and pay more too.

2. Housing

There should be ample fresh air, free from drafts. Air must be circulating. High levels of non-desirable gases decrease growth rate and increase flock's susceptibility to respiratory disease. Ensure that the litter is dry. A well managed litter helps the birds in putting on feathers and improve feed conversion. It also reduces coccidiosis problem.

3. Crowding

Overcrowding increases mortality, stress, as well as production cost.

4. Feeding

Always ensure adequate fresh feed. Birds that are without feed for six hours will record a drop in production and a 12 hour starvation will result in moult of wing feathers. There should be adequate feeder space for the birds. Guard against feed wastage. Maintain records of daily feed consumption. It will enable to determine feed utilisation and bird's performance.

5. Watering

Provide plentiful and clean disinfected water. This management factor, although obvious, is commonly violated. Water restriction is a quick way to accidentally force the flock to moult. Ensure that the waterers are so placed that they are easily accessible to birds.

6. Lighting

The duration of light should be 16 hours per day, but not beyond 17 hours. No advantage is obtained by exceeding this limit. The amount of light given to the flock in one day should never be less than that given the day before. A decreasing day length can prematurely cause hens to go out to production. One 40 watt electric bulb is sufficient for 200 sq.ft. area.

7. Vaccination

Ensure that all birds are vaccinated for Marek's Disease and Ranikhet Disease. Birds not vaccinated are highly susceptible to these disease.

8. Debeaking

Follow correct debeaking programme. Poor debeaking can adversely affect egg production.

9. Culling

Unsuitable and uneconomic birds should be timely culled.

10. Health

Watch for early signs of disease for its timely treatment before it flares up in a big way. Some of the symptoms that indicate the onset of disease problems are : Drop in egg production and feed consumption: increased morbidity and mortality: inactivity and lack of vigour: droopy ruffled appearance and respiratory distress. Look for any sudden change in egg quality.

11. Sanitation

Sanitary measures are of vital importance in poultry operation. Keep roundworms, tapeworms and caecal worms under control. External parasites are a serious farm hazard, and can reduce production if unchecked. Deworming at regular intervals should be practised.

12. Egg Quality

Respiratory and intestinal diseases should be kept under control for the maintenance of quality of egg shells. Indiscriminate use of sulpha drugs can affect the egg shell quality. The use of tetracycline can, however, improve it.

13. Records

A daily record of feed consumption, egg production, mortality, income and expenditure is essential to help improve farming efficiency and pinpoint troubles and their solutions.

14. Routine Checking

Critical items of management should be listed on a daily, weekly or seasonal check list. Every item must be checked. It helps to locate the cause of trouble when it occurs. Routine checks are: Cleaning and refilling of waterers and feeders: cleaning the house and spraying insecticide; stirring the litter; dusting; culling of birds; egg collection, etc.

15. TLC

Tender loving care

(Source : Indian Poultry Industry Year Book)

Annexure I

Format for submission of schemes

Scheme : Poultry - Layer Farming

1. GENERAL

i) Name of the sponsoring bank

ii) Address of the controlling office sponsoring the scheme

iii) Nature and objectives of the proposed scheme

iv) Details of proposed investments

Sl. No.	Investment	No. of units
(a)		
(b)		
(c)		

v) Specification of the scheme area

(Name of District & Block/s)

Sl. No.	District	Block

vi) Names of the financing bank's branches

Sl. No.	Name of the Branch	District
(a)		
(b)		
(c)		

vii) Status of beneficiary/ies : (Individual)/Partnership/

Company/Corporation/ Co-operative Society/Others

viii) In case of area based schemes, coverage of

borrowers in weaker sections (landless labourers, small,

medium & large farmers as per NABARD's norms, SC/ST, etc.)

ix) Details of borrowers profile (Not applicable to area based schemes)

(a) Capability

(b) Experience

(c) Financial soundness

(d) Technical/Other special Qualifications

(e) Technical/Managerial Staff
and adequacy thereof

2. TECHNICAL ASPECTS

a) Location, Land and land Development

i) Location details of the project

ii) Total Area of land and it's cost

iii) Site map

iv) Particulars of land development,

fencing, gates etc.

b) Civil Structures

Detailed cost estimates

along wth measurements

of various civil structures

- Poultry Sheds

- Store room

- Egg room

- Office room

- Quarters for staff

- Others

c) Equipment/Plant and machinery

i) Brooders

ii) Feeders

iii) Waterers

iv) Cages

v) Generator

vi) Feed grinder and mixer

vii) Debeaker

viii) Vaccinator

ix) Fridge/Deep Freezer

x) Truck/van/Jeep(Price quotations

for the above equipments)

d) Housing

i) Type of housing DeepLitter/Cage/Slat

ii) Area required (sft./bird)

e) Birds

i) Proposed strain

ii) No. of birds to be purchased

iii) Age of the birds

iv) Source of birds

v) Cost of birds (Rs. per bird)

vi) Vaccination of purchased birds

vii) Proposed programme of replacement

f) Production parameters

i) Number of eggs produced

ii) Feed efficiency (kg of feed/No. of eggs produced)

iii) Mortality (%)

g) Flock Projection Chart

h) Feeding

i) Source of availability Purchased or own feed manufacturing

ii) If purchased

a) Place of purchase

b) Brand

c) Cost (Rs./kg)

- Chick mash

- Grower mash

- Layer mash

iii) If manufactured on farm

a) Capacity of feedgrinder and mixer

b) Source of raw materials

c) Feed formula

d) Cost of production(Rs./kg)

- Chick mash

- Growing mash

- Layer mash

iv) Requirement (kg per bird)

- Chick mash

- Grower mash

- Layer mash

i) Veterinary aid

i) Source

ii) Location

iii) Distance (km.)

iv) Availability of staff

v) Type of facilities available

vi) If own arrangements are made

a) Employed a veterinary doctor/

stock man / consultant

b) Periodicity of visit

c) Amount paid (Rs.)

vii) Expenditure per bird (Rs.)

j) Electricity

i) source SEB/ Other

ii) Approval from electricity board

iii) Connected load

iv) Problems of power failure

v) Arrangements for generator

k) Water

i) Source

ii) Quality of water

iii) Availability of sufficient quantity for drinking and cleaning

iv) If investment has to be made type of structure, design and cost

l) Marketing of eggs

i) Source of sale

ii) Place of disposal

iii) Distance (km.)

iv) Basis of payment (number or weight)

v) Price realised - (Rs./egg)

vi) Periodicity of payment

m) Marketing of other products

i) cull birds Rs./bird

ii) Manure - Qty./bird, price per unit (Rs./Ql)

iii) Empty gunny bags Number and cost/bag

n) Beneficiary's experience

o) Comments on technical feasibility

p) Government restrictions if any

3. FINANCIAL ASPECTS

i) Unit Cost

Sr. No.	**Name of Investment**	**Physical Unit and Specification**	**Unit cost with component wise break-up (Rs.)**	**Whether approved by state level unit cost committee**
Total :				

ii) Down payment/margin/subsidy (Indicate source & extent of subsidy)

iii) Year - wise physical & financial programme.

Year	**Investment**	**Physical Units (Rs.)**	**Unit Cost (Rs.)**	**Total Outlay (Rs.)**	**Margin/ Subsidy (Rs.)**	**Bank Loan (Rs.)**	**Refinance Assistance (Rs.)**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total :							

iv) Financial viability (comment on the cash flow projection on a farm model/unit and enclose the same)

Particulars

a) Internal Rate of Return (IRR):

b) Benefit Cost Ratio (BCR) :

c) Net Present Worth (NPW) :

v) Financial position of the borrowers (to be furnished in case of corporate bodies/partnership firms)

a) Profitability ratio

i) Gross Profit ratio

ii) Net Profit ratio

b) Debt equity ratio

c) Whether Income tax& other tax obligations are paid upto date

d) Whether audit is upto date (enclose copies of audited financial statements for the last three years)

vi) Lending Terms

i) Rate of interest

ii) Grace period

iii) Repayment period

iv) Nature of Security

v) Availability of Government guarantee wherever necessary

4. INFRASTRUCTURAL FACILITIES

a) Availability of technical staff with bank/implementing authority for monitoring

b) Details of

i) technical guidance

ii) training facilities

iii) Govt support/extention support

c) Tie-up arrangements with marketing
agencies for loan recovery

d) Insurance

Type of policy

Periodicity

Rate of premium

Annexure II (a)

Economics of layer farming Project at Glance

1. Unit size : 1500 birds in lay

2. System of rearing : Deep litter for growers and cage housing for layers

3. State : Karnataka

4. Unit cost (Rs.) : 348875

5. Bank loan (Rs.) : 261656

6. Margin money (Rs.) : 87219

7. Repayment period (years) : 8 with one year grace period

8. Interest rate (%) : 12

9. BCR at 15% DF : 1.019 : 1

10. NPW at 15% DF (Rs.) : 194455

11. IRR (%) : 34

Annexure - II (b)

Economics of layer farming - Investment cost

Sl. No.	Particulars	Specifications	Physical Units	Unit Cost (Rs./unit)	Total Cost (Rs.)
1	Sheds and other stuctures				
	A) Brooder cum grower shed (deep litter)	1 sft per bird	500 sft	80	40,000
	B) Layer sheds (under cage system)	0.8 sft per bird	1,200 sft	90	108,000
	C) Store room		100 sft.	100	10,000
2	Water supply system (Bore well, Electric motor pump set - 1 HP, water tank and pipeline)	Lumpsum			10,000
3	Equipments				
	Brooding cum growing house		500 birds	10	5,000
	Laying house (cage)		1,500	40	60,000
4	Capitalisation of recurring expenses for first 3 batches				
	A) Chick cost	1,545	DOCs	13	20085
	B) Feed cost	7kg/bird	10815 kg	8.00	86,520
	C) Overheads such as cost of eletricity, medicines, vaccine, insurance, litter, etc.	1,545	birds	6	9270
5	Total financial outlay (TFO)				3,48,875
6	Margin Money @ 25% of TFO				87219
7	Bank loan @ 75% of TFO				2,61,656

Annexure - II (c)

Economics of layer farming - Techno economic norms

1	No. Of birds in lay	1,500
2	Rearing period (weeks)	72 (20 + 57)
	Brooding cum growing period (weeks)	20
	Laying period (weeks)	52
3	No. Of batches	3
4	Space requirement per bird (s.ft.)	
	Brooder cum grower period	1
	Layer period (cage system of housing)	0.8
5	Cost of construction (Rs./s.ft.)	
	Brooder cum grower shed	80
	Layer shed	90
6	Store room (s.ft.)	100
7	Cost of construction of store room (Rs./s.ft)	100
8	Equipment cost (Rs./bird)	
	Brooder cumn grower house	10
	Layer house – cages	40
9	Mortality (%)	
	Brooding cum growing stage	6
	Laying stage	7
10	Cost of DOCs (Rs./chick)	13.0
11	Supply of free chicks (%)	3
12	Extra chicks purchased (%)	3
13	Feed requirement (Kg./bird)	
	Brooding cum growing stage	7
	Laying stage	38
14	Feed cost (Rs./kg.)	
	Chick/grower mash	8
	Layer mash	7
15	Labour cost	Family Labour
16	Over heads cost (Cost of litter, electricity, medicines, vaccine, insurance, etc.)	
	Brooding cum growing stage (Rs./ bird)	6
	Laying stage (Rs./ bird)	8
17	Egg production	300
18	Egg price (Rs./ egg)	'1.40
19	Average body wt. Of culled birds (Kg.)	1.5
20	Sale price of culled bird (Rs./ bird) (465 / batch)	45
21	Income from manure (Rs./ bird)	
	Brooding cum growing stage (515 / batch)	1.5
	Laying stage (500 / batch)	7
22	No. Of gunny bags per ton of feed	13.3
23	Income from gunny bags (Rs./ bag)	10

24	Depreciation on sheds (%)	5
25	Depreciation on equipment (%)	10
26	Margin money (%)	25
27	Interest rate (%)	12
28	Repayment period (years)	8
29	Grace period (years)	1
30	Construction period (months)	3
31	Rest period (weeks)	
	Brooder cum grower house (weeks)	4
	Layer house (weeks)	4

Annexure - II (d)

Economics of layer farming

bird chart schedule under 1:3 system of rearing

Year	Batch No.	Grower house weeks	Laying Number	House Weeks	Weeks grow	Weeks lay	No. Of batches introduced	No. Of batches culled
I	1	13-28	A	29-52	20	20	1	-
	2	33-48	B	49-52	20	0	1	-
					40	**20**	**2**	**0**
II	1		A	01-32	0	32		1
	2		B	01-52	0	52		1
	3	01-16	C	17-52	20	32	1	-
	4	21-36	A	37-52	20	12	1	-
	5	41-52	-	-	12	-	1	-
					52	**128**	**3**	**2**
III	3	-	C	01-20	0	20		1
	4	-	A	01-40	0	40		1
	5	01-04	B	05-52	8	44		
	6	09-24	C	25-52	20	24	1	
	7	29-44	A	45-52	20	4	1	
	8	49-52	-	-	4	0	1	
					52	**132**	**3**	**2**
IV	5	-	B	01-08	0	8		1
	6	-	C	01-28	0	28		1
	7	-	A	01-48	0	48		1
	8	01-12	B	13-52	16	36		
	9	17-32	C	33-52	20	16	1	
	10	37-52	-	-	16	-	1	
					52	**136**	**2**	**3**
V	8	-	B	01-16	0	16		1
	9	-	C	01-36	0	36		1
	10	-	A	01-52	4	48		
	11	05-20	B	21-52	20	28	1	

	12	25-40	C	41-52	20	8	1	
	13	45-52	-	-	8	0	1	
					52	**136**	**3**	**2**
VI	10	-	A	01-04	0	4		1
	11	-	B	01-24	0	24		1
	12	-	C	01-44	0	44		1
	13	01-08	A	09-52	12	40		
	14	13-28	B	29-52	20	20	1	
	15	33-48	C	49-52	20	0	1	
					52	**132**	**2**	**3**
VII	13	-	A	01-12	0	12		1
	14	-	B	01-32	0	32		1
	15	-	C	01-52	0	52		1
	16	01-16	A	17-52	20	32	1	
	17	21-36	B	37-52	20	12	1	
	18	41-52	-	-	12	-	1	
					52	**140**	**3**	**2**
VIII	16	-	A	01-20	0	20		1
	17	-	B	01-40	0	40		1
	18	01-04	C	05-52	8	44		
	19	09-24	A	25-52	20	24	1	
	20	29-44	B	45-52	20	4	1	
	21	49-52	-	-	4	0	1	
					52	**132**	**3**	**2**

Closing Stock					
Batch No.	**Number of birds**	**Age (Wks)**	**Value per bird**	**Total value**	**Total value of 3 batches**
18	480	64	60	28,800	
19	490	44	90	44,100	
20	500	24	95	47,500	
21	520	4	45	23,400	143800

Annexure - II (e)

Economics of layer farming - Cashflow statement

Sl. No.	**Y E A R S**								
		I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**
I	**COSTS**								
1	**Capital Cost :**	2,33,000	0	0	0	0	0	0	0
2	**Recurring Costs* :**								
a)	Cost of chicks	13390	20085	20,085	13,390	20,085	13,390	20,085	20,085
b)	Cost of feed Growing stage	57,680	78984	78984	78984	78984	78984	78984	78984
	Laying Stage	52688	3,37,205	3,47,743	358682	358282	347443	368820	4,00432

c)	Misc. Expenses								
	Growing stage	6315	8034	8034	8034	8034	8034	8034	8034
	Laying stage	1545	10,142	10458	10458	10458	10458	10458	10458
	Total Costs	3,64618	454450	465304	469148	475843	453609	486381	517993
II	**BENEFITS**								
1	Sale of Eggs	75,000	4,80,000	4,95,000	5,10,000	5,10,000	4,95,000	5,25,000	4,95,000
2	Sale of culled birds	0	41,850	41,850	67,775	41,850	67,775	41,850	41850
3	Sale of manure Growing stage	1,545	2,009	2,009	2,009	2,009	2,009	2,009	2,009
	Laying stage	1,346	8,615	8,845	9,154	9,154	8,845	9,423	8,845
4	Sale of gunny bags	2,000	7,557	7,750	7945	7945	7750	8130	7750
5	Depre ciated value of								
a)	Sheds								1,10,337
b)	Equip ments								35,872
6	Value of closing stock								1,43,800
	Total Benefits	79,891	5,40,031	5,55,454	5,96,883	5,70,958	5,81,379	5,86420	8,45,463
III	**Net benefits**	-284727	85581	90150	127735	95115	122770	100039	327470
IV	**NPW**		**Rs. 194455**						
V	**BCR**		**1.09:1**						
VI	**IRR**								34

* Excluding the capitalised amount on chicks, feed, over heads etc.

Annexure - II (f)

Economics of layer farming - Repayment Schedule

Bank loan (Rs.) 223000

Interest rate (%) 12

(Rupees)

Year	Income	Expenses	Gross Surplus	Loan Balance	Interest	Repa yment Int.	Repa yment Pri.	Net Surplus
I	79891	15743	64148	261656	31399	31399	0	32749
II	540031	454450	85581	293055	35167	35167	5000	45414
III	555454	465304	90150	288055	34567	34567	35000	20583
IV	596883	469148	127735	253055	30367	30367	55000	42368
V	570958	475843	95115	198055	23767	23767	35000	36348
VI	581379	458609	122770	163055	19567	195667	55000	48203

VII	586420	486381	100039	108055	12967	12966.57	45000	42072
VIII	845463	517993	327470	630545	7567	7567	63055	256848

Note : The expenses during first year is difference between the total costs and total project cost. Average loan period in first year is considered as 9 months
for working out interest and only interest will be recovered

ANNEXURE - III

Space Requirement Data

Age	Floor space (sq.ft./bird)		Feeding space (inches)	Watering space (inches)	Height of feeders & waterers	Litter depth (inches)
	DL	CS				
0-8 weeks	0.5	0.25	2.0	0.6	1.5	3
9-16 weeks	1.0	0.55	2.5	0.8	2.5	4
17-76 weeks	2.0	0.80	3.0	1.0	5.0	6

ANNEXURE - IV

Average growth rate and feed requirement for egg type chickens

Age in weeks	Average weight of bird (gms.)	Cumulative feed in kgs. Per 1,000 birds
4	275	650
8	590	1900
12	850	3400
16	1100	5000
20	1300	7000
24	1550	10000
30	1600	14500
40	1700	22000
60	1700	37000
80	1700	52000

ANNEXURE - V

Recommended rations (per quintal of feed) for various age groups of layers

Composition	Unit	Chick mash (0-8 weeks of age)	Grower mash (8-20 weeks of age)	Layer mash	
				Phase I (20-45 weeks)	Phase II (45-80 weeks)
Yellow Maize	kg.	29.0	26.0	35.0	40.0
Rice Polish	kg.	33.7	43.8	32.1	31.1
Wheat Bran	kg.	-	2.0	-	-
Groundnut cake	kg.	22.0	13.0	17.0	12.5

(expeller pressed)					
Fish Meal	kg.	10.0	7.0	6.0	6.0
Lucerne Meal	kg.	3.0	3.0	3.0	3.0
DL-Methionine	gm.	4.0	-	-	15
Molasses	kg.	-	3.0	-	-
Mineral Mixture	kg.	2.0	2.0	3.0	3.0
Vitamin A+B2+D3 supplement	gm.	20	20	30	30
Vitamin B12 supplement	gm.	20	20	20	20
Vitamin K	mg.	100	100	100	100
Vitamin E	mg.	200	200	200	200
Potassium Iodide	mg.	20	20	20	20
Manganese Sulphate	m.	5	3	3	3
Zinc Carbonate	gm.	8	5	3	3
Shell Grit	kg.	-	-	3.8	4.3
Antibiotic feed Supplement	gm.	50	50	50	50
Zinc Bacitracin	gm	100	100	-	-
Coccidiostat	gm	50	32	-	-

Source : Central Training Institute for Poultry Production & Management (CTIPPM),

Hessarghatta, Bangalore.

ANNEXURE - VI

Vaccination Schedule for Layers

Effective and proper vaccination programme in poultry is necessary to prevent mortality and losses from many dreadful poultry diseases. Vaccination programmes are available against the major poultry diseases viz. Ranikhet, Marek's disease and Fowl pox. All birds reared on your farm either for your own stock or for sale to the public must be properly vaccinated.

(a) The schedule of vaccination should be as follows :

1. F Vaccine for Ranikhet should be administered at the time of hatch or within first 7 days of age. One drop of vaccine in the eyes or one drop in the nostril is given. Care should be taken not to release the chick until it has inhaled the nasal drop and/or blinked its eye.

2. Pigeon Pox Vaccine can be administered if available at approximately two weeks of age. Remove a small patch of feathers from the thigh of the chick and apply vaccine to the bare skin. Approximately 10 to 14 days after the vaccination a small scab will indicate that the vaccine has taken effect. Ten birds are to be checked to make certain of the take. Care must be taken to observe outbreaks of pecking and cannibalism at this time.

3. Ranikhet disease and Fowl Pox Vaccination :- This vaccination must be given when birds reach 6 weeks of age. Fowl Pox and RD vaccine are suspended in 50% glycerine saline solution and the birds innoculated by the webstick method in the web of the wing. An instrument with two needles is to be used. Six to ten days after the RD-FP vaccination, check ten chicks for a take. Reactors to RD vaccine will show the symptoms of Ranikhet Disease. A fowl pox take is indicated by two small scabs at the puncture points. If scabs are not present, revaccinate with fresh vaccine.

(b) It is essential that all four vaccinations are given and in the proper sequence. A sufficient stock of properly refrigerated vaccine must always be kept on hand and all vaccinations are to be given according to instructions. It is equally important to observe birds after vaccination to make certain that the vaccine has been effectively given.

(c) Precautions

Water soluble anibiotic/electrolyte can be given in the water 4 days prior to and 5 days after the vaccination to reduce stress.

Vaccination Calender

The vaccination schedule is a general guide. Each farm and area will require some changes in the schedule. Following table can be used as a geneal guideline.

Name of Vaccine	Route	Age of birds
La Sota or F vaccine Ranikhet	Intranasal drop	3 to 7 days
Marek's vaccine (in Hatchery)	Intramuscular	1 day
Infectious Bronchitis (1st dose)	Eye drops	2 - 3 weeks
La Sota Ranikhet	Drinking water	5 - 6 weeks
Fowl Pox (1st dose)	Wing Web	7 - 8 weeks
R2B Ranikhet	Sub cut or Intramuscular	9 - 10 weeks
Infectious Bronchitis	Eye drop or drinking water	16 weeks
Fowl Pox (2nd dose)	Skin Scarification	18 weeks
La Sota (if necessary) Ranikhet	Drinking Water	20 weeks
La Sota (if necessary) Ranikhet	Drinking Water	40 weeks
IBD :		
Mildly invasive vaccine	Drinking Water	0 - 3 day
Intermediately invasive vaccine	Drinking Water	15th day
Intermediately invasive vaccine	Drinking Water	28-30th day

It is necessary to keep proper records on date of vaccination and on vaccines used including type, brand, serial number, date of purchase and date of use of vaccine.

Annexure VII

Guidelines for integrated biosecurity in poultry production

A set of recommended biosecurity practices to be adopted by the poultry farmers for minimising the disease occurrence is given here under in brief.

1. Locational biosecurity :

* Farm should be located

- At an elevated and well ventilated site

- Away from any existing farms or complexes

- Away from water ways/water pools/lakes/tanks

- Away from any nearby village poultry

* Broiler and layer units should not be established in close vicinity

* Farms having more than 50000 (Layers) should have preferably separate facilities for

brooding/growing.

* The new poultry farms may be one kilometer away from the existing farms or complexes.

2. Structural biosecurity:

- Construct separate sheds for brooding/growing/laying operations with East-West orientation.
- A minimum distance of 150 ft. between brooding/growing sector and layer sector should be maintained. The distance between the sheds within the sector should be at least 50 ft.
- In case of farms wherein brooding/growing operations are carried out along with layer operations 1:3 system of rearing may be adopted, while in case of units where brooding/growing operations are carried out at separate places, 1:1:4 or 1:1:5 system of rearing may be adopted.
- Multi-storeyed poultry sheds are not desirable.
- Individual farms should be provided fencing with wheel dip at main gate. Provide foot dips at every doorstep.
- The maximum width of the sheds in case of deep litter system should not exceed 30 feet and the shed should be 2 feet above ground level with pucca floor.
- A minimum over hang of 3 feet must be provided.
- The maximum width of the sheds should be 33.5 feet in case of layer houses under cage system.
- In case of cage system rows as well as tiers should not be more than three.
- The height of the plat form from the ground should not be less than 6 feet in case of cage system.
- For ideal farming 3 birds per cage with adequate water and feeding facilities should be ensured
- Provide closed disposal pit or incinerator at least 500 feet away from the active operational area.
- A store house for proper storage of litter material should be provided to avoid contamination.
- Provide proper area for used litter disposal away from the active operational area.
- Feed store/mill should be 150 feet away from the sheds and preferably near the gate.
- Office and egg store should be away from active operational area and preferably at the main gate.
- All the sheds and other structures should have rat proof arrangements.

3. Operational biosecurity :

- Procure the day old chicks, which are free from diseases from reputed hatcheries
- It is advisable to have cage system of rearing in place of deep litter system of rearing.
- As far as possible automated equipment should be considered to minimize the manual handling of feeds and water.
- Testing feed ingredients/feeds must be arranged to ensure that they are free from

microbial agents or toxins at periodic intervals.

- Storage facilities for feed ingredients/feeds must be managed in an hygienic manner.
- Ensure the feed manufacturing area free from dust, cobwebs and should be equipped with appropriate screens to protect from fly problem.
- It is advisable to feed the birds with pellets for improved biosecurity.
- Sheds having infected flocks should be served with feed at the end of a delivery day.
- Always ensure the supply of clean and potable water. If necessary use appropriate sanitizers.
- Periodic inspection of wells, piping and tanks to ensure that water supplied is clean.
- An area specific vaccination schedule as recommended by hatchery doctor must be practiced with utmost care.

- Rodent control programme, where ever necessary, must be adopted by employing mechanical (traps) or chemical techniques along with strict sanitation measures.
- After selling of each crop from the sheds, thorough cleaning of sheds by removing all fixtures, equipment, litter dust, debris followed by brooming and burning. The rat holder cracks, worn out area should be packed with cement.
- Cleaning of the vegetation thoroughly six feet around the sheds and spraying of bleaching powder (1 parts) with lime (3 parts) around the sheds a minimum of 3 feet.
- Avoid use of litter as manure around the farms.
- Well cleaning of sheds and equipment with water and appropriate detergent.
- A thorough disinfection of sheds, equipments as well as farm surroundings by formalin spray at recommended concentration.
- Foot baths should be always filled with disinfectant.
- Vehicles visiting the farms should be thoroughly disinfected by appropriate disinfectant spray.
- Personnel working in laying sectors should not be allowed into brooding/growing sector or feed manufacturing facilities. All visitors must be ensured to walk through foot baths.
- Disposal of dead birds in hygienic manner either by using incinerator or by pit method is very essential.