



# LAYER GUIDE

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**Feedmaster**  
Your Quality Solution

## Layer poultry production

The poultry industry has developed vastly in the past 50 years. There are many different breeds of chickens available, but selection towards increased productivity has seen the development of specific breeds for meat and egg production. The goal of any layer farm is to produce as many eggs as possible at the lowest cost.

During the growth cycle of a layer, many management factors may affect the total lifetime egg production of the layer hen. Management and access to information is a very important aspect of egg production.

If you want to be a successful egg producer, you should master the day-to-day management tasks of running a layer farm and the most significant element is the feed. This includes the availability and effective application of feed in the layer house. Feed makes up approximately 60-75% of the total operating cost. Therefore, it is of utmost importance to make use of a well-balanced, cost-effective feed ration.

This is why we at Feedmaster only use quality raw materials, formulated by qualified poultry nutritionists, to supply the poultry farmer with a quality feed solution by adhering to ISO22000 compliance and Quality Assurance.

## Different systems of layer farming

### Free-range system

The free-range system implies that the hens walk around freely, are not housed, or only partially housed. Animal welfare and initial start-up costs of a battery system are one of the deciding factors when choosing between a free-range production system and a battery production system. Under normal conditions, a free-range system has a lower feed conversion ratio, because the hens move around more. Therefore wasting more energy which increases production costs. The extra production costs of a free-range system is another factor which contributes to whether or not it will be economically viable to produce under these conditions. The producer should also insist on getting a premium

The following factors are important:

- Hens will lay eggs everywhere so build nesting boxes to reduce time spent searching for eggs
- Bring hens into a cage at night to reduce losses from predation
- Remove eggs daily to avoid hens getting broody

- Water and feed should always be available
- Do regular check-ups on hens to ensure they are healthy
- Lots of dirty eggs in a free-range system can increase the effort of cleaning eggs.



### Battery/Caged system

A battery-caged system keeps many layers caged in a housed environment, mostly elevated from the ground. The system is a more intensive system with normally higher egg yields due to less locomotion, better control over feed intake, and control over environmental factors. (Better, feed conversion ratio than free-range chickens). The start-up costs of a battery system are very expensive, but greatly reduces the risk of salmonella contamination.

The following factors are important:

- Hens cannot look for their food so feed should always be available
- Cage floors need to be cleaned weekly
- Monitor chickens when placed, to ensure water and food is located
- To improve production, add stress powder and vitamins to water at least every two weeks.



The system chosen depends on your market, preference or dislike of either system, availability of space, and finances.

## Starting up with layers

You have three options when starting up. You could either get point of lays (hens ready to lay eggs), day-old layer chicks or you can hatch eggs bought, under your hens / in an incubator.

## Hatching of layer eggs

### Advantages

- The cheapest option
- Large amounts of chicks can be incubated in an incubator.

### Disadvantages

- Takes very long to reach production - at least 21-23 weeks
- Both male and female chicks hatch
- Egg quality bought may vary
- The incubator may fail, causing big losses.

## Day-old chicks

### Advantages

- Buying day-old chickens is a cheaper option than point of lays.
- Raising them yourself is also much cheaper and you can control the quality of the hens you raise.
- Hens stay in production longer when raised correctly.
- You can also control their vaccination and ensure a strong immunity against diseases.

### Disadvantages

- Raising your hens from day-old chicks to point of lays, does have the added risk of mortalities.
- You have to have a good cash flow to raise them, as they do not produce eggs in these 18 weeks of raising.
- You carry the vaccination and feed costs and you do not benefit immediately after the purchase.



## Point of lay hens

### Advantages

- The hens are in production immediately or short after purchase
- No feed cost to raise the chicks
- Less vaccination cost
- Mortalities are less than day-old chicks
- No roosters.

### Disadvantages

- Point of lays are much more expensive than day-old chicks
- You cannot control the quality of your hens
- Hens might bring in diseases if not purchased from a trusted supplier
- Signed-off rearing programs not always available for future production claims.

\*Always request the feeding, growth, and vaccination schedule when the buying point of lays to ensure quality is maintained during raising.



## Housing

- Poultry House should be built with shortest closed sides in an East to West direction.
- The house should have side curtains opening from the top to the bottom. This improves ventilation and avoids direct airflow on hens.
- House can be insulated, prevent big fluctuations in temperatures and conserve heat during the night and cool down during the day.
- Roof overhang should be extended to avoid the hens from being exposed to rain. Gutters can also be used to divert and collect rainwater.
- Concrete floors are ideal and most hygienic, however expensive. All floors need to be covered in bedding. Ground floors are the cheapest option, least hygienic and difficult to clean.

Make use of metal and plastic when building. These materials are easy to clean

## Chick management and control

### Placement of chicks

- The chicken house must be cleaned and disinfected at least 10-12 days before the placement of the new chicks
- Pre-heat the floor 2 days before chick placement (Floor temperature 32 °C)
- Feed and water should also be placed the day before to ensure that it would be room temperature and available when the chicks are placed
- Use paper to cover 50% of the brooding area and place feed on the paper to stimulate intake in the first 24 hours
- Weigh 10% of the chicks to get a starting weight.

### Post-placement chick checks

1. Check chicks 4/6 hours after placement.

Test the temperature of the chicken's feet against your cheek. If cold, the preheating was not done correctly and the farmer should re-evaluate the preheating procedures.

Results of cold floor temperature:

- Poor early feed intake
- Poor growth
- Poor flock uniformity (hens not all the same size at the same age)

2. Check chicks 24 hours post-placement.

This check is called a crop check. The reason for this check is to confirm that the chicks found the placement of feed and water.

- By this time a minimum of 95% of the crops should feel soft and pliable, indicating chicks have successfully located feed and water
- Hard crop – chicks have not found adequate water. Check the water supply immediately
- Swollen and distended crop - chicks have located water but insufficient feed. Check the feed supply immediately.

### Daily checks should be made throughout the cycle:

- Check if there are cold spots and draughts in the house
- Check if the ventilation is correct - no build-up of ammonia
- Check if the drinkers and feeders are at the correct height and if there are enough of them for the number of birds
- Check for wet bedding or too dry bedding. Keep notes of all dead birds removed and if mortalities are above 10%, consult a vet.

## Brooding

Brooding is a period immediately after the chicks hatch when special care and attention is given to chicks to support their health and survival.

During the first 14 days, a chick cannot properly control its body temperature. This is why it is so important to manage their environmental temperature.

The development of the following would be improved by good brooding practices:

1. The skeletal structure
2. The cardiovascular system
3. Appetite and water consumption
4. Health and the immune system
5. Minimize stress.

### Types of brooders:

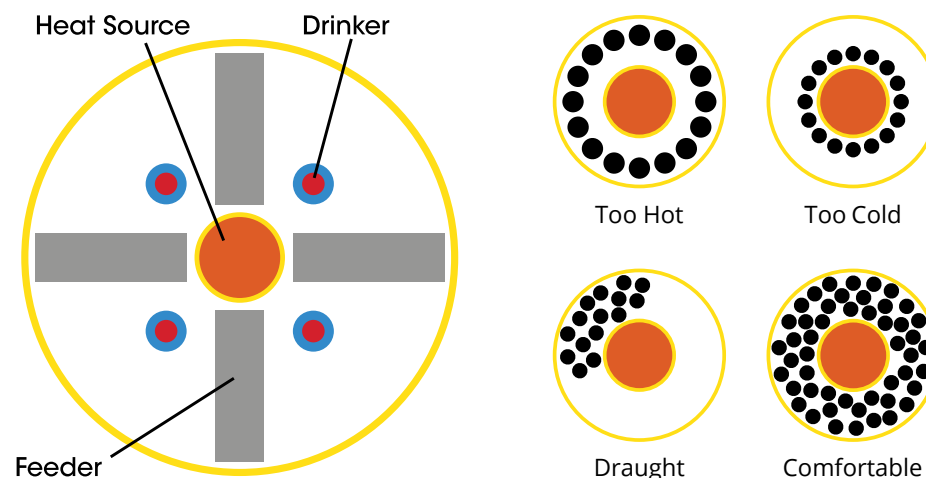


Charcoal brooder

Infra-red lamp brooder

Gas brooder

### An indication of chick comfort in a brooder



\*The black spots indicate the chicks.

## Lighting program

Layer hens tend to be very sensitive to change in lighting. As seasons change from summer to winter, days grow shorter, a hen's production tends to decrease. This can be controlled by using artificial lighting. A period of darkness is also a natural requirement and should be taken into account. Lighting can be more difficult in open houses and free-range systems.

### Why is a lighting program important?

- Better egg production because of energy conserved during resting
- Reduce mortality rate and skeletal defects
- Stimulates the production of melatonin. Melatonin is important in the development of the immune system.

Flock age	Hours light a day	Light Intensity (Unit Lux)
Brooding Phase 1 (1-2 Days)	23	30-50 lux
Brooding Phase 2 (3-7 Days)	16	30-50 lux
Growing Phase 1 (8 days -3 weeks)	14-16	25 lux
Growing Phase 2 (4 weeks -19 weeks)	9-11	25 lux
Laying (20 weeks -72 weeks)	Increase by 1/2 hour weekly to max 16-17 hours	30 lux

## Molting

Every year hens molt (losing their older feathers) and grow new ones. This condition is caused by a reduction of day length, resulting in reduced feeding time and consequent loss of bodyweight. Other reasons for molting includes hens reaching the end of their productive life cycle. Hens normally only lay eggs for 52 weeks profitably. Most hens stop producing eggs until molting is completed. In most cases molting in hens occur once a year, though it can occur in some hens twice in one year.

### The advantages of keeping hens during the moult:

- It is cheaper to carry the hens through moulting rather than to buy replacements.
- Moulded hens are hardier and not as prone to contract diseases.
- If strict culling is carried out during the first year, only highly productive and efficient hens will be retained.



### Disadvantages

- Hens require large amounts of proteins to replenish lost feathers.
- When hens moult, they continue to eat but remain unproductive.

Note: With a good lighting program, molting can be controlled.

## Temperature management

Temperature plays a vital part in egg production. Too low temperatures during the first few weeks can affect your hen's production during her entire egg-laying cycle. At a later stage, the temperature does not have that large effect, but extremes should be avoided.

Free-range hens need shelter for the night as temperatures can decrease drastically.

### How to control temperature:

- Brooders can keep chicks warm at a young age
- Shaded areas will keep direct sunlight/heat from older hens
- Open houses or free-range systems ensure hot air escapes by ventilation.

Age	Cage Rearing (°C)	Free Range rearing(°C)
Day 1-2	35	36
Day 1-4	33	34
Day 5-7	31	32
Week 2	28	29
Week 3	26	27
Week 4	22	24
Week 5-72	18-20	18-20

\*Body temperature for chicks can be about 40-41°C

## Ventilation

The function of ventilation is not only to supply the chicks and hens with an adequate supply of oxygen, but it also assists with the removal of waste products, growth, and combustion from the environment such as:

- Moisture removal
- The provision of oxygen to meet the bird's metabolic demand
- The control of relative humidity
- The maintenance of good litter conditions.

Always ensure that there is a good supply of fresh air at all times, but be careful not to have a cold draft blowing into the brooding house as chicks are more sensitive to cold. Good maintenance of house curtains (if hens in battery cage) are needed. Free-range chickens tend not to have any problems with ventilation.

## Bird Health

### Bio-security

Prevention is by far the most economical and best-known method of disease control. Prevention is best achieved by the implementation of an effective biosecurity program in conjunction with an appropriate vaccination program. Bio-security is a practice designed to prevent the spread of disease on your farm. It is accomplished by maintaining the facility in such a way that there is minimal traffic of biological organisms (viruses, bacteria, rodents, etc.) across its borders. It is the most effective and cheapest means of disease control on the farm. Below are a few key points to a successful bio-security program:

- Farms should be fenced
- Limit non-essential visitors to the farm
- Farm supervisors should visit the youngest flocks at the beginning of the day and work by age to the oldest flock for the last visit on that day.
- Provide wheel dips or wheel spraying facilities at the farm entrance and allow only necessary vehicles on site.
- Sanitise feet/shoes with a footbath upon entering the cage or hen house entrance
- Dispose of dead birds immediately.

### Vaccination

Vaccination is the administration of antigenic material (a vaccine) to stimulate the bird's immune system, to develop adaptive immunity to a pathogen. That means that it gives the bird's defense mechanism a "memory" system against that disease. Consult your supplier of point of lays or day-olds on vaccinations already done on birds. Further contact your local vet/vaccination sales representative for a prescribed vaccination schedule for your area.

Methods of vaccination:

- Eye drop vaccinations
- Injection vaccinations
- Drinking water vaccinations
- Spray vaccinations

The most common vaccinations given to layers are against diseases such as:

- New Castle Disease
- Infectious Bursal Disease (Gumboro Disease)
- Infectious Bronchitis
- Fowl Pox
- Infectious Coryza
- Infectious Laryngotracheitis (ILT)

## Vaccination program for layers

Age	Disease to be Controlled	Route of administration	Example of Brand Name
Day 1	Infectious Bronchitis	Coarse spray	Nobilis IB MA5
Day 8	Infectious Bursal Disease	Drinking water	Nobilis Gumboro D78
Day 16	Newcastle	Coarse spray	Nobilis ND Clone 30
	Infectious Bursal	Drinking water	Nobilis Gumboro D78
Day 22	Infectious Bursal Disease	Drinking water	Nobilis Gumboro D78
Week 5	Infectious Bronchitis Disease	Eye drop	Nobilis IB 4-91
Week 8	Infectious Bronchitis	Coarse spray	Nobilis IB MA5
	Newcastle Disease	Coarse spray	Nobilis ND Clone 30
Week 10	Infectious Coryza	Subcutaneous injection	Nobilis Coryza
	Avian Encephalomyelitis and Fowl Pox	Wing web	Tremvac- FP
Week 13	Infectious Bronchitis	Coarse spray	Nobilis IB MA5
	Newcastle disease	Coarse spray	Nobilis Clone 30
Week 15	Infectious Coryza	Subcutaneous injection	Nobilis Coryza
Week 17	Newcastle	Fine spray	Nobilis Clone 30
	Infectious Bronchitis	Fine spray	Nobilis IB MA5
<b>Repeat this interval until birds are culled</b>			
Week 18+	Newcastle disease	Coarse spray - wait 2 weeks to repeat	Nobilis Clone 30
	Infectious Bronchitis		Nobilis IB MA5
	Newcastle disease		Nobilis Clone 30
	Infectious Bronchitis		Nobilis IB 4-91

These are guidelines only. Every farm will end up developing their vaccination schedule depending on their needs and the type of vaccine being used.

## Flock Uniformity

Uniformity amongst hens is very important. Equally sized hens is a good indication of future production ability. Uniform hens become sexually mature at the same time, saving money on feed. Uniform hens also tend to stay longer in production resulting in more eggs per life cycle and thus better profits.

How to calculate flock uniformity:

### Example:

The total weight of flock is 86260g of which the flock size is 95 hens.

$86260g \div 95 \text{ hens} = 908g \text{ per hen}$

$908g \text{ per hen} \times 10\% = 91g$

$908g + 91g = 999g$  (Upper value)       $908g - 91g = 817g$  (lower value)

$817g < \text{Uniform Flock} > 999g$

So for instance, 85 hen's weights lay within this weight range

$81 \text{ hens} \div 95 \text{ hens} \times 100 = 85\% \text{ uniformity}$

85% + is very good uniformity

70% - is poor flock uniformity

### Factors which influence flock uniformity:

- Stocking density
- Feed structure (avoid selective feed intake)
- Trough/ Feeder length and height
- Availability of water



## Eggs

Most breeds of layer typically produce eggs economically until the age of 72 weeks. In this period a hen, under the correct circumstances, should lay between 300 and 326 eggs. Egg sizes increase as the hens get older. Chickens with brown earlobes tend to lay brown eggs and the hens with white ear lobes lay white eggs. A healthy laying percentage is 80% to 100% laying per day in peak production. This means 80% of the flock will lay an egg a day.

### Points to remember:

- Eggs are fragile and should be handled with care. Package in egg trays for the best protection.
- Sell the older eggs first. Do not keep eggs longer than 2 weeks before selling.
- Store eggs at room temperature between 18°C and 25°C. Refrigerated eggs tend to form condensate on shells when removed from the fridge, and causes bacteria such as salmonella to grow on the surface.
- Remove eggs daily to avoid hens eating their eggs

- If any blood is found on egg check the hen to avoid cannibalism
- Count the number of eggs daily to determine laying percentage and to identify possible problems in the flock.
- Eggs should not be washed

## Nutrition

Layer diets are formulated to provide the energy and nutrients essential for health and efficient egg production. The basic nutritional components required by the birds are water, amino acids, energy, vitamins, and minerals. Sufficient calcium for shell production is specifically vital in our layer mash.

### Feedmaster provides the following:

- All our products are specifically formulated by qualified nutritionists to achieve the desired production levels at a lower cost
- Feedmaster is ISO 22000 accredited
- All our products are formulated with natural products such as maize, soya, sunflower oilcake, chop, and bran.
- We do not include any animal protein sources or animal-derived products into any of our product ranges
- We adhere to strict bio-security rules at all times to reduce possible contamination.
- The produced feed adheres to a rigorous quality control process to confirm the quality before being distributed.

Week	Days	Feed intake (g/ bird/day)	Total feed intake per week in (g) per bird	Feed type	Bodyweight target (g)
1	7	13.5	94.5	Pullet Starter	60
2	14	20	140	Pullet Starter	120
3	21	25	175	Pullet Starter	190
4	28	29	203	Pullet Starter	275
5	35	33	231	Pullet Starter	360
6	42	37	259	Pullet Starter	450
7	49	41	287	Pullet Grower	540
8	56	46	322	Pullet Grower	630
9	63	51	357	Pullet Grower	720
10	70	56	392	Pullet Grower	810
11	77	61	427	Pullet Grower	900
12	84	66	462	Pullet Grower	1000
13	91	70	490	Pullet Grower	1095
14	98	74	518	Pullet Grower	1180
15	105	76	532	Pullet Grower	1265
16	112	78	546	Pullet Grower	1350
17	119	80	560	Pullet Grower	1425
18	126	87	609	Pullet Grower	1475-1500

- The previous table is based on Lohman Brown breed standards.
- Pullet grower is given until 5% of the flock are in lay (for every 100 hens 5 must lay)
- Layer Mash 100 Larvadex are given ad lib daily
- Intake should range between 95g-110g per hen per day.

## Requirements to raise a pullet flock

Amount of Pullets	Pullet Starter Requirements (kg)	Amount of bags Pullet Starter	Pullet Grower Requirements (kg)	Amount of bags Pullet Grower	Total Bags
100	110	3	550	11	14
200	259	6	1100	22	28
300	443	9	1651	33	42
400	664	14	2201	44	58
500	924	19	2751	55	74
600	1226	25	3301	66	91
700	1573	32	3851	77	109
800	1960	40	4402	88	128
900	2381	48	4952	99	147
1000	2821	57	5502	110	167

## Layer Mash 100 Larvadex feed requirements

Amount of hens	Intake (g)	Total intake in a month (kg)	Amount of bags in a month (50kg)	Amount of bags in a year
100	110	341	7	84
200	110	682	14	168
300	110	1023	21	252
400	110	1364	28	336
500	110	1705	35	420
600	110	2046	41	492
700	110	2387	48	576
800	110	2728	55	660
900	110	3069	62	744
1000	110	3410	69	828

\*Daily feed intake may differ between different breeds due to different environmental factors.



## Feeding schedule by product - variant



### Pullet Starter Mash

Feed one-day-old chick until 6 weeks of age.

Intake in this phase is of utmost importance as the frame of the bird, as well as organs, are developing during this period.



### Pullet Grower Crumble

Feed from 6 weeks until 50% of hens are in lay

Maintain the same growth rate as the previous phase to ensure that the frame developed can support the final mass of the hen



### Layer Mash 100 Larvadex

Feed from point of lay until culling

Average intake 110g per day, depending on health status and environmental conditions

## Water Management

- To ensure optimum egg quality and overall health, the water supplied to the hens should be of a good standard.
- Chicks and pullets which do not drink enough water will have an inadequate feed intake and bad growth. This effects future egg production ability.
- Do regular checks to ensure that drinkers are working properly and/or are full.
- Make sure drinkers are at crop level and the water pressure is correct.
- When temperatures are high or if birds have health problems, they consume more water to regulate body temperature.
- Add chlorine tablets to the water to sanitize water, but not during vaccination days
- Under normal conditions, hens drink between 250 ml -500 ml of water each day.
- Do not feed water directly out of a borehole or big tank. Divert water to a smaller catchment tank to help with medicating and vaccination of hens.
- A 100-liter tank is ideal for a 100 hen setup.





## Important notes

- The amount of feed per bird is a suggestion, stick to the recommended feeding days indicated on the feeding table.
- For the first 10 days, feed should be on the pan feeders or paper.
- From day two, feed should also be in feeding troughs so that the chicks can learn to eat from it.
- Do not place feed or water directly under the heat source as this may cause the chicks to eat or drink less than they should.

## Record keeping

The biggest purpose of accurate records is for the farmer to utilize the information in future decision making. Accurate record-keeping is essential to monitor the performance and profitability of a flock.

Daily records that should be taken:

- Amount of eggs collected
- Amount of misshaped eggs
- Feed consumption
- Water consumption
- Egg sizes
- Water treatments
- Minimum and maximum daily temperatures
- Mortalities amongst hens
- Management changes

Flock records (a summary at the end of the flock's cycle)

- Feed deliveries (supplier/amount/type/date of consumption)
- Feed sample from each feed delivery
- Live weight (daily/weekly/daily gain)
- Medication (type/batch/mount/date of administration/date of withdrawal)
- Lighting program followed
- Chick delivery (number/date/time/truck temperature and humidity)
- Stocking density in case of battery cages

\*All the information of this guide was based on the most common breed of layers in Namibia - Lohman Brown. The above information may vary for different breeds.



# LAYERS LIFE CYCLE

DAY OLD CHICK  
UNTIL 6 WEEKS  
OLD PULLETS



7 WEEKS OLD  
UNTIL 20 WEEKS  
OLD PULPET  
(Till point of lay)



21 WEEKS OLD  
TO 72 WEEKS' OLD  
(Point of lay till cull)



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