



Southern African Poultry Association
Suider-Afrikaanse Pluimveevereniging

Founded 1904
Gestig 1904

POULTRY PRODUCTION INFORMATION BROCHURE

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In association with the

Southern African Poultry Association

INTRODUCTION

Poultry production is divided into the production of meat (broilers) and eggs. Specific breeds have been developed for the production of poultry meat and specific breeds for the production of eggs and includes the management and physical facilities required, diseases and their control and the treatment of sick birds. This information brochure serves as a guide to the production of both meat and eggs. It must be stressed that this brochure is only a guide and persons interested in producing either poultry meat or eggs should attend a more comprehensive training course before starting your own operation.

BROILER PRODUCTION

1. INTRODUCTION

Broiler production is the production of poultry meat. The production cycle is usually six to seven weeks long, which is relatively short when compared with other forms of meat production. The normal method of producing broilers for the market involves purchasing the birds as day-old chicks and feeding them for a period of approximately six to seven weeks after which they are sold or slaughtered. Although this process appears to be very simple, it is essential that good management is applied, to ensure mortality levels are low and daily growth rate is maximized.

2. HOUSING

Housing is one of the most important aspects of broiler production in that the type of house determines the number of birds which can be kept and the level of managerial input required.

Floor

Where possible the floor should be cemented or alternatively very hard compacted soil, which is impervious to water. This ensures that the house can be adequately cleaned and disinfected after each batch of broilers (see later). The floor should also be flat and even, because an uneven floor will cause leg problems in the birds. On the floor bedding must be spread. The function of the bedding is to absorb the moisture from the faeces and urine of birds. The bedding is not replaced during the growth of a batch of broilers and hence remains on the floor for at least seven weeks. Suitable bedding materials include:

- a) **Wood Shavings** – are the most ideal material and should be spread evenly over the floor at a depth of at least 3 centimeters. Ensure that the shavings are from wood that has not been treated with chemicals.
- b) **Sawdust** – can be used, but it is very dusty and can cause respiratory problems in the birds. Sawdust should be used if no other suitable bedding is available.
- c) **Sunflower husks** – are suitable if available. Generally sunflower husks are difficult to transport and hence not often used. Note when husks get wet they turn blue, this will not cause any ill effects.
- d) **Wheat straw** – makes an excellent bedding material. At the end of the production cycle the straw can be used as a cattle feed.

Veld or teff hay are **not** suitable bedding materials because they do not have good water holding properties and this leads to fungal growth in the wet bedding which poses a source of infection to the birds. Shredded paper is also **not** a suitable bedding

material since it tends to become very hard and clogged leading to an uneven floor which could cause leg problems.

Walls

A corrugated iron sheet turned on its side, or a half metre (0,5m) mud/brick wall are adequate for surrounding the floor area. From this level to the roof, plastic fertilizer bags or hessian bags or plastic sheet may be used. Wire mesh from the dwarf "wall" to the roof should also be used where possible to prevent birds from escaping and to prevent doves and pigeons from entering the house to eat the feed. The curtain can then be lowered during the day and during hot weather and when the birds are older and closed at night or when the weather is cold or when the chicks are very small. Movement of the curtains are thus used to control the environment within the house. **Note** however that curtains must be rolled down from the roof to the floor and not the other way around.

Birds may be stocked at a rate of 10 birds per square metre. However if ventilation is poor or is extremely hot areas a lower stocking density would be advisable.

Roof

The roof can either be pitched, flat or of saw tooth design and covered with zinc, IBR sheeting or thatch. The roof should be at least 2 metres from the ground to allow easy access and adequate ventilation.

3. VENTILATION

One of the most important aspects of broiler production is ventilation. Ventilation is required to remove warm and stale air which is contaminated with ammonia (which is given off from the faeces and urine). If this air is not removed it will cause irritation of the respiratory tract, which may lead to the outbreak of respiratory diseases like colibacillosis (see later). The overall result is reduced weight gains and high mortality levels.

A practical method of checking whether the ventilation is adequate is to kneel on the floor (the level at which the birds breathe) and inhale. If a fairly strong ammonia smell is present (which would cause your nose and eyes to burn) then the ventilation is inadequate.

4. FEEDERS

In order for chicks to learn to eat at an early age, a large area of feed must be supplied in the first few days. Usually the first feed is spread over a large flat container with a shallow edge of 2 to 3 cm in height. The floors of the boxes in which the chicks were transported can be used as scratch feeders provided that the sides are cut down to the height mentioned. Black plastic or brown paper laid on the floor can also be used. Newspaper is not suitable because it tears too easily. Special plastic feeders called scratch feeders can be bought.

Second feeders

When the chicks are \pm 5 days old, the scratch feeders become impractical and larger feeder must be used. These feeders should be large enough so that they may be used until the birds are marketed. Several types of feeders exist:

- a) Trough feeders: Troughs or gutters are usually 1,2 to 1,8 metres in length, and are filled by hand. A grill over the top of the trough will prevent feed wastage and prevent the birds standing in the troughs.
- b) Tube feeders: These are large tubes about 20 to 40 cm in diameter and about 0,6 metres long. At the bottom a large pan is suspended into which the feed flows from the tube, and from which the birds eat. Tube feeders are usually suspended from the ceiling. The pan of the tube feeders should be at the height of the back of the birds and thus as the birds grow bigger the tube feeders should be lifted higher to prevent excessive wastage of feed. It is essential that these feeders are shaken at least three times a day to prevent the feed clogging in the tube and not flowing. One would require a minimum of 3 tube feeders per 100 birds.
- c) Car tyres: car tyres cut in half are also suitable for use as feeders in small operations. As the birds grow bigger the tyres should be raised from the floor by resting them on bricks.

Whatever type of feeders are used it is essential that there are a sufficient number so that 75 % of the birds may eat at any one time.

5. WATERES

Plastic chick founts can be purchased and should be placed at floor level initially and as the birds get bigger they should be raised off the ground by being supported on bricks. A similar homemade watering fount can be made with a plastic two-litre cool drink bottle e.g. Coca-cola bottle. This is done by simply cutting the base off the bottle, filling the top half with water and inverting this onto a flat plate of dish (a pot plant dish is suitable and cheap). Automatic watering systems are available but tend to be expensive.

It is important that clean, **fresh** water is **always** available to the birds.

6. HEATING

The young chicks must be provided with heat for the first 21 to 24 days of their lives. The actual length of time that heat needs to be provided is dependent on the geographical area in which the birds are kept and the season of the year. In warmer climates and during summer time, heat will have to be provided for a shorter period of time than in cold climates and during winter. The initial temperature required is 32° C which should be gradually decreased over a three week period to 26° C. Thereafter the house is kept at environmental temperature.

Heat may be provided by means of gas or electrically operated brooders. Alternatively a small anthracite heater could be placed in the middle of the floor. The smoke generated must however be removed so as not to pollute the house. Practically any form of heater should serve the purpose.

Instead of heating the whole house, a section containing the birds may be divided off with a plastic sheet or feed bags, called parthouse brooding. As the birds grow older the curtain can be moved to allow more space.

In practice it is easy to tell whether the birds are too hot or too cold in that they will all huddle close together and close to the heater if they are cold or spread far from each other and the heater if they are too hot. It is critical that attention is paid to chick comfort and hence monitoring of the temperature in the house is essential. It is also important to note that although the house is being heated, sufficient ventilation to remove the ammonia odour should still exist. The corners of the house should also be rounded off, by using hardboard or some similar material to prevent the young chicks being crushed in the corner.

7. FEEDING

a) Practically in small scale systems broilers are fed two different feeds over the seven week period that they are kept. They are initially fed **broiler starter** for a three week period followed by **broiler finisher** for the last four weeks. It is important that the birds are fed nutritionally balanced feed if the expected growth rates and marketing periods are to be realised.

b) Feed consumption

During the first 20 – 24 days the birds will consume approximately 1 kilogram of feed, and during the next 21 – 28 days they will consume approximately 2½ to 3 kilograms of feed. Thus over the six to seven week period they will consume a total of 3½ to 4 kilograms of feed. The actual feed consumption will depend on certain factors such as: the age at marketing of the birds, the amount of feed wastage, whether the birds are too cold (they will eat more to keep themselves warm) etc.

It must be remembered that broilers have been bred to eat in order to gain body mass rapidly and thus feed must be available at all times even when you may think they are eating too much!

Associated with the above feed intake one would expect the following weight gains:

Expected weight gains (males and females)

Week	Weight (grams)
1	120 – 130
2	270 – 310
3	520 – 580
4	975 – 1100
5	1125 – 1400
6	1190 – 2000
7	2000 – 2200

EGG PRODUCTION

1. HOUSING

A suitable type of house to accommodate the birds and cages will be required (see housing discussion above). The house should be adequately ventilated to prevent the birds becoming too hot in the summer months. A suitable size house to accommodate

150 laying birds in a three tier cage system is as follows: 4m (length) x 3m (width) x 2,2m (height).

2. CAGES

The most suitable type of cages for laying birds are galvanised wire cages that are raised above floor level. These cages can be bought in various configurations e.g. single tiers, three tiers, etc. The accommodation of birds in this type of cage which is raised off the floor has numerous advantages which include: more birds may be accommodated in a smaller area, conditions are more hygienic, less damaged eggs result, less fouling or eggs occurs, etc.

Laying hens kept on a floor (normally called free range systems) usually consume more feed, they may lay less eggs and the percentage of dirty and cracked eggs may be high.

3. BIRDS

Laying birds may be bought as day olds and reared, but this tends to be expensive, time consuming and mortality may be high. Alternatively, young hens (pullets) that are 18 to 19 weeks of age may be purchased. These hens would begin laying within two weeks, i.e. at an age of 20 to 21 weeks. Furthermore, these birds will have been fully vaccinated by the suppliers against all common diseases, including diseases causing a drop in egg production without mortality.

The laying hens should be kept for one laying season which is approximately 50 – 52 weeks in duration and then sold as cull hens. A new batch of point-of-lay pullets can then be purchased. If the hens are kept for a period longer than 52 weeks they will tend to produce less and less eggs, until they stop producing altogether. Point-of-lay pullets cost about R15 each and their cull value is approximately R17 each.

4. EGG PRODUCTION

The achievement of maximum egg production per bird is depending on the provision of light. Birds should receive 16 hours light per day. This can easily be achieved if electricity is available, by simply having the lights come on before sunrise and remain on after sunset. In this way the desired “day length” may be achieved.

If electricity is unavailable and the light period cannot be extended, the birds would not be expected not to achieve their potential egg production.

With lights egg production would be in the order of 270 eggs/hen/52 weeks. Without lights would be reduced to approximately 200 eggs/hen/52 weeks. It is important that maximum use of nature daylight is used if electricity is not available. This can be done by situating the house correctly and opening the curtains early in the morning and lowering them after sunset.

5. FEEDING

The pullets purchased are the best laying birds available and require a good quality well balanced feed if they are to achieve their potential egg production. We thus recommend that a commercial laying feed is purchased, more specifically an **all mash laying mash**.. This feed is available from most Co-operatives. Normally the birds are fed an ad lib amount of feed and will not eat more than 120 grams each per day.

POULTRY DISEASES

The following diseases are often encountered by producers. It is important to know that in most instances a veterinarian will be required to make a proper diagnosis and give relevant advice. The nearest State Veterinarian can assist in this regard

1. NEWCASTLE DISEASE

Mild to very severe forms of Newcastle disease occur. In severe cases all birds in an unvaccinated flock may die.

Spread

Newcastle disease is often carried onto a poultry farm on the clothes and shoes of people that had contact with other infected chickens as well as on contaminated equipment from other farms. Wind spread does occur as well.

Symptoms

Respiratory distress, including sneezing and coughing are often seen. In severe cases a green diarrhoea and nervous symptoms occur. The nervous symptoms include twisted necks, unsteady gait and birds walking backwards.

Prevention and Treatment

There is no known treatment once the birds contracted the disease.

The disease can be prevented through vaccination and hygiene. Do not allow any visitor onto a poultry farm.

2. GUNBORO DISEASE

Severe Gumboro disease can kill 20% of broiler chickens and up to 70% of pullets being reared for laying. Only chickens younger than 12 weeks are susceptible.

Spread

The organism that is responsible for the disease is very tough and can spread easily in the same manner as described for Newcastle disease.

Symptoms

A whitish diarrhoea and severely depressed birds is a common symptom. The mortality starts rapidly and lasts for about 3 to 5 days. Thereafter the birds recover but they remain very susceptible to other diseases.

Prevention and Treatment

There is no treatment once the disease is contracted.

Vaccine are available that can prevent the disease.

A very good hygiene programme is required to get the disease removed from an infected farm.

Do not allow any visitors onto a poultry farm.

3. FOWL POX

Spread

The disease is carried and spread by mosquitoes.

Symptoms

Wart-like lesions occur on the unfeathered areas, particularly around the eyes and mouth. Mortalities are low but the growth of the birds may be affected.

Prevention and Treatment

Vaccination at about 6 to 9 weeks of age.

4. MAREKS DISEASE

Mareks disease affects birds between the age of 10 and 30 weeks of age. The organism responsible for the disease is however contracted at a very early age, probably within the first 10 days of life. The organism is commonly found and unvaccinated birds will almost inevitably contract the disease.

Symptoms

Birds may appear paralysed with one leg or wing affected. Often they will loose condition and become emaciated and eventually die. Mortality rate may be between 20 and 90%, but it is more a gradual onset with birds being lost daily between 10 and 30 weeks.

When dead birds are examined cancerous tumours are often found in the liver, lung, heart and skin.

Prevention and Treatment

Day old vaccination in the hatchery must be done on all birds which are intended to be kept for 10 weeks and more, such as layers. Broilers need not be vaccinated due to the fact that they will mostly be slaughtered before that age.

Good hygiene measure, especially with regard to the washing and disinfection of empty houses before placement, are essential.

There is no treatment available once the disease is contracted.

5. CORYZA

Spread

Infectious coryza is carried in the same manner as Newcastle disease: people and equipment that came from other infected birds. Wind may also spread the disease over shorter distances.

Symptoms

In broiler and layers the disease causes respiratory symptoms: sneezing, coughing and a one sided swelling below the eye. In layers it causes a severe drop in egg production.

Prevention and Treatment

There are a number of effected treatments to use once birds show symptoms. The state veterinarian can assist in this regard.

In broilers vaccination is not possible due to the fact that every bird has to injected and that the recommended vaccination age is more than the expected production span for broilers.

Young birds intended for laying can be vaccinated between 11 and 16 weeks of age with an injectable vaccine.

Good hygiene measures and preventing possible contaminated equipment and people from coming into contact with the chickens are essential.

6. COLIBACCILOSIS

The disease with this strange name often causes losses, especially in broilers.

Cause

There are a number of factors that can cause the disease. Other diseases such as Newcastle disease, coryza and other viruses not mentioned earlier such as infections bronchitis may all precipitate the disease.

The most important cause however, is poor management technique such as incorrect brooding temperatures, too high a number of birds per floor area, poor drinker and feed management, houses too draughty, dusty or with poor airflow.

Symptoms

Respiratory symptoms such as sneezing, coughing or with the skin swollen around the eye. Birds become depressed and die. Survivors have poor growth rates.

Prevention and Treatment

- Most medicines must be given over a period of a few days. You **MUST** treat the chickens for the number of days recommended by the manufacturer of the medicine even if the chickens look better before the time.
- All medicines have an expiry date after which they should not be used. Look for the date on the label of the medicine.
- Always check on the container for instructions on how the medicine must be stored. If you can't find any instructions then keep them stored in a cool dark place e.g. cool cupboard.
- Because medicines can be dangerous, please make sure that they are kept in a safe place.
- If you don't get results with a treatment please speak to a knowledgeable person that can give you good advice on what to do.
- Many diseases in chickens are caused by problems with the way they are kept. It is, therefore, important to make sure that you house and feed your birds properly.

4. VACCINATION

There are some diseases that can be prevented by using vaccine. For a vaccine to work properly there are some important things to remember:

- Store the vaccine correctly – most of them must be kept in a fridge.
- Use the vaccine correctly. The suppliers of the vaccines or a vet will be able to give the correct advice.
- Give the vaccine correctly. Vaccines are applied with the drinking water or as a spray. For the correct way of applying the vaccine speak to the supplier.
- Make sure that all the chickens receive vaccine.
- If any vaccine is left over it must be thrown away. You can't keep it for longer than 2-3 hours.

In this section we have covered only the basics of treating and vaccinating birds. If you are not sure about anything **PLEASE** contact a vet of the company that made the product for help and advice.

ISOLATION OF CHICKENS

Most diseases that kill chickens can be transmitted from one house to another house. In many cases these diseases are carried by humans, birds, other chickens and pet animals or rats which move from house to house. It is essential that the chickens are kept as isolated as possible to reduce the risk of disease transmission.

The following guidelines will help in achieving this goal:

- Keep only one group of chickens in each house
- Try to keep the poultry houses as far as possible

- Only the essential people are to enter the poultry houses. They must shower and put on Clean overalls before entering the houses. They must also make use of foot baths to clean their boots before entering.
- The access of equipment into the house must be controlled. Ensure that this equipment is also cleaned and disinfected as well.
- All animals of equipment into the house must be controlled. Ensure that this equipment is also cleaned and disinfected as well.
- All animals have to be prevented from coming near to the poultry houses. This includes other chickens, domestic animals, rats, birds and insects.

CLEANING AND DISINFECTION OF POULTRY HOUSES

The cleaning and disinfection of poultry houses are absolutely vital in giving the birds the best chance of survival.

Once all the birds have been removed from the house the following cleaning steps have to be done thoroughly:

- Remove all litter far away from the house. Strip all feeders and drinkers. Sweep the house as clean as possible.
- Mix a detergent with the water and spray all the walls with a pressure sprayer. Make sure all the dirt is completely washed away
- Use a proper disinfectant mixed with water and spray all the surfaces in the house. Make sure all the surfaces are thoroughly wet. The feeders and drinkers must also be cleaned and disinfected.
- Close the house and ensure that no people or animals enter the house
- You can place the shavings on the floor a day before new batch of chickens arrive