



**THE MODERN FARM**  
**THE REALITIES ABOUT POULTRY**

**BY**

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## **Preface**

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Keeping poultry makes a substantial contribution to household food security throughout the world. It helps diversify incomes and provides quality food, energy, fertilizer and a renewable asset in over 80 percent of rural households.

Small-scale poultry farmers throughout the world are however, constrained by poor access to markets, goods and services; they have weak institutions and lack skills, knowledge and appropriate technologies. The result is that both production and productivity remain well below potential and losses and wastage can be high. However, adapted breeds, local feed resources, and appropriate vaccines are available, along with proven technologies that can substantially improve productivity and income generation. In the book, we shall equip the farmer with skills and knowledge that can be applied for successful poultry farming.

Among other aspects, the following are discussed in this book: Poultry farming in general, poultry housing, feeding, bio-security, pests, diseases, disease control, record keeping, and break-even analysis.

## **Acknowledgements**

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## **Dedications**

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**The Modern Farm: The Realities about Poultry** is dedicated to you (the reader) because you are the very reason why it was written.

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## INTRODUCTION TO POULTRY FARMING



**Poultry farming** is the raising of domesticated birds such as chickens, turkeys, ducks, quails, and geese for the purpose of getting meat, or egg production. Birds are farmed in great numbers with chickens being the most numerous.

**Poultry farms** are farms that raise chickens, ducks, turkeys, and other birds for meat, or egg production. In the past, poultry farming involved raising chickens in the back yard for daily egg production and family consumption. However, poultry farming today is a huge business that is split into several operations including hatcheries, pullet farms for meat production, or farms for egg production. This book will focus on raising chickens.

As the human population increases, the poultry industry continues to grow to meet the demand for poultry products in world markets. The importance of poultry farms lies in the quality of products that are provided to humans. Broiler farms provide meat that supplies the human body with high quality proteins. Layer farms provide eggs rich in proteins and vitamins, especially the fat soluble vitamins (A, D, E, and K). Poultry farms can fulfill the demand for meat and eggs, and can be expanded easily to meet the ever-growing demand.

Each operation in the poultry business has become a huge business by itself. Some farms specialize in producing eggs for market consumption, or for hatching chicks for the purpose of meat production. Many large farms specialize in raising broilers for meat production. Other businesses are focused on feed preparation or on using the wastes of poultry farms for compost production and fertilizing farmlands. If managed and marketed well, all segments of the poultry business can be profitable.

## Keys to Successful Poultry Farming

Owing to the increasing demand for chicken, eggs and the quest for self-employment, many people are turning to poultry farming with mixed results. Some have succeeded while due to poor planning, others have failed. They have failed due to their failure to plan. If someone is planning or is already into poultry farming and he or she wishes to grow it big, there are factors he or she needs to consider. Some of these factors include:

1. **Type of Birds:** This is vital as other factors are dependent on it. The housing system, feeds, equipment and facilities someone may require for this venture are dependent on the type of birds to be kept. Chicken can be kept for their eggs, or meat (layers or broilers) and recently, huge interest has grown for indigenous chickens. As such, a farmer has to decide upfront what his or her interests are.

### Chicken Breeds in Uganda

✚ **Layers:** These are chicken breeds reared specifically for the production of eggs. Egg laying chicken breeds that can be reared include but not limited to the following:

- **Australorp Chicken:** The Australorp is a chicken breed of Australian origin, developed as utility breed with a focus on egg laying.

The Australorp, like many breeds of chicken, comes in both bantam and standard size and multiple colours.

The Australorp currently has three recognized colours according to the Australian Poultry Standard; black, white and blue.





- **Leghorn Chicken:** The Leghorn is a breed of chicken originating in Tuscany, in central Italy. Birds were first exported to North America in 1828 from the port city of Livorno, on the western coast of Tuscany. The leghorn chicken is mainly kept for eggs. The leghorn chickens come in mainly three colours: black, white, and brown.



- ✚ **Broilers:** These are chicken breeds reared for their meat. Below are some of the major broiler chicken breeds.

- ❖ **Brahma Chicken:** The Brahma is a large breed of chicken developed in the United States from very large birds imported from the Chinese port of Shanghai. The Brahma was the principal meat breed in the US from the 1850s until about 1930. The primary use of this chicken breed is meat though it can lay about 150 eggs a year.





✚ **Dual Purpose Breeds:** These are chicken breeds reared for the production of both meat and eggs. Below are some of the dual purpose chicken breeds.

❖ **Kuroilers:** A Kuroiler Chicken is a chicken breed with indigenous traits which grows faster and lays more eggs than the local chicken. This chicken breed has been introduced in Uganda. Kuroilers were first successfully introduced in India more than a decade ago. The birds are low-maintenance scavengers that thrive on household and agricultural waste. Just like the local breeds, the Kuroilers are largely kept under a free range system, where the birds are left to scratch for food with no restrictions and very little or no supplements.

The difference is that while the locals are moderate while scratching for food and may even take a rest, Kuroilers are aggressive and feed continuously. This explains why they put on weight faster than the local breeds



❖ **Plymouth Rock chicken:** The Plymouth Rock is a breed of domestic chicken from the United States. It originated in New England in the 19th century from cross-breeding of Dominiques and Black Javas. The Plymouth Rock was bred as a dual-purpose fowl, meaning that it was valued both for its meat and the egg-laying ability of the hens. It is a cold-hardy bird. The hens lay brown eggs, and continue laying all through the very cold season with decreased production.



❖ **Rhode Island Red:** The Rhode Island Red is an American breed of chicken. It is a utility bird, raised for meat and eggs, and also as a show bird. It is a popular choice for backyard flocks because of its egg laying abilities and hardiness. The bird's feathers are rust-colored, however darker shades are known, including maroon bordering on black. Rhode Island Reds have red-orange eyes, reddish-brown beaks, and yellow feet and legs, often with a bit of reddish hue on the toes and sides of the shanks. Chicks are a light red to tan color. The roosters usually weigh in at about 8.5 pounds (3.9 kg), the hens average slightly less at 6.5 pounds (2.9 kg). Rhode Island Reds are good layers of brown eggs. Hens lay 5–7 eggs per week. The hens lay approximately 312 eggs in their first laying season and 223 in the second.





- ❖ **Sussex chicken:** The Sussex chicken is a dual purpose breed of chicken that originated in England around the time of the Roman conquest of Britain in AD 43 that is a popular garden chicken in many countries. The Sussex chicken is an alert, docile breed that can adapt to any surroundings. They are comfortable in either free range or confined spaces and in the presence of humans, although they will mate and breed better in larger spaces. The breed frequently goes broody in the warmer months. They are good foragers and are generally vigorous and hardy as a garden fowl.



### **Eggs**

The Sussex was bred to be a dual purpose bird and is one of the most productive breeds of poultry. They lay large eggs that are cream to light brown in colour. A person owning a hen of this breed should expect approximately 240 to 260 eggs a year (from 180 to 320 eggs), although the light and white varieties are the best choice for layers. Recently there has been an olive green coloured egg introduced to some Light Sussex breeds, although these green egg layers are very rare. In some cases, exhibition lines that have been selected for exhibition qualities rather than egg laying over many generations may produce lower eggs numbers, although there are plenty of good laying lines still available.

### **Meat**

It is a good producer of meat and all of the varieties are a good choice to have for this purpose. The chicks mature quickly for heavy breed but the speckled is slowest to mature. The carcass is a larger leggier shape than the commercial broiler chicken, but is closer to the heritage meat

produced in the past. Cockerels that are harvested at around six months of age will be meaty with a firmer flesh than the younger broiler chicken of today.

- ❖ **New Hampshire Chicken:** The New Hampshire breed of chicken originated in the state of New Hampshire in the United States. The mature birds are a rich chestnut red, of a somewhat lighter and more even shade than the Rhode Island Reds. The chicks are also a lighter red. A dual purpose chicken, selected more for meat production than egg production. Medium heavy in weight, it dresses plump carcass used as either a broiler or a roaster.

They possess a deep, broad body, grow feathers very rapidly, are prone to go broody and make good mothers. Most pin feathers are reddish, brownish buff in color and, therefore, do not detract from the carcass appearance very much. The color is a medium to light red and often fades in the sunshine. The comb is single and medium to large in size; in the females it often lops over a bit. While mainly raised for meat, they are also modest producers of brown eggs. Some strains lay eggs of a dark brown shell color. New Hampshire chickens are competitive and aggressive, with other chickens.





- ❖ **Naked Neck:** The Naked Neck is a breed of chicken that is naturally devoid of feathers on its neck and vent. Naked Necks are fairly common in Europe today, as well as in Africa, but are rare in North America. The trait for a naked neck is a dominant one controlled by one gene and is fairly easy to introduce into other breeds.

Naked neck chickens are dual-purpose utility chickens. They lay a respectable number of light brown eggs, and are considered desirable for meat production because they need less plucking and they have a meaty body. They are very good foragers and are immune to most diseases. The breed is also reasonably cold hardy despite its lack of feathers. Naked Neck roosters carry a single comb, and the neck and head often become very bright red from increased sun exposure. This breed has approximately half the feathers of other chickens, making it resistant to hot weather and easier to pluck.

Recognized color varieties include: black, white, cuckoo, buff, red, and blue in the United Kingdom and black, white, buff, and red in the United States



- ❖ **Rhode Island White:** The Rhode Island White is a breed of chicken originating in the U.S. state of Rhode Island. Despite their very similar names and shared place of origin, the Rhode Island White is a distinct breed from the Rhode Island Red. However, Rhode Island Reds and Whites can be bred together to create Red Sex Link hybrid chickens, such as the ISA Brown.

Rhode Island Whites are a dual-purpose fowl suitable for both meat and egg production. Males weigh 8.5 pounds (3.9 kilos) and hens weigh 6.5 pounds (3 kilos). They have a single variety, with pure white plumage, red wattles and earlobes, and a medium size rose comb.



- 2. Housing:** It is said that by building a good housing system, one solves more than 40% of all poultry rearing problems. Chicken must be guarded from hostile weather conditions such as cold, rain, sun and wind. Safety from predators should also be considered in putting up a house unit. Snakes, rodents, foxes, dogs, mongoose and other animals are chickens' enemies. It is therefore important to confine them in modern structures. The housing unit should have perches for the chicken to roost on at night.

A poultry shed should be sufficiently ventilated to allow in enough oxygen for the birds. Wire mesh can be used for the walls of the shed and it is vital that the number of birds do not exceed the stocking rate of the shed. Overpopulation affects the birds' health and increases disease incidences. On average, stocking rate should be 2 square feet per bird for layers and 1 square foot per bird for broilers. A traditional brooding basket can be used as a brooder for chicks either inside or outside the house. This is because chicks should be kept away from the chickens.



**3. Equipment and Facilities:** With the housing, it is also important that it is fitted with the necessary poultry equipment and facilities. The equipment and facilities are specific for different stages of the poultry project as discussed below: **Brooder:** For the brooder the following equipment and facilities are necessary:

- Heat source: The heat sources could be: brooder pots, charcoal stove, heat bulbs, among others.
- Drinkers
- Feeders
- A thin layer of litter on the floor. A farmer can either use coffee husks or wood shavings.

Normally the brooding stage is critical and may require specific facilities as discussed above. After the brooding stage, other necessary equipment include; feeders, drinkers, culling cage (for sick birds), egg crates (for layer) and so on. Based on the type and number of birds a farmer chooses to keep, he or she needs to buy sufficient equipment in advance before getting the chickens.

**4. Source of Chickens and Selection of the Breeding Stock:** For the initial starting up, a farmer may decide to either buy chicks from suppliers or hatch them him or herself. He or she may decide to naturally multiply his or her flock especially for indigenous poultry. In this case, one factor to consider is careful selection of the chickens and cocks to ensure only better qualities are passed on. Select a hen that is broody, does not abandon her eggs during hatching and looks after her chicks well. Select a healthy, strong cock and a cock should be allowed only ten hens.

The other option is buying day old chicks. These can be purchased from breeders worldwide.

**5. Feeds:** Feeding is an important part of raising chickens. Feeds make up the major cost of production and good nutrition is reflected in the bird's performance and its products. Hence, the ability to manage feed costs and reduce feed wastage is a key component in successful poultry farming.

**6. Disease Control:** Chickens are subject to numerous diseases and parasites. In fact, diseases and parasites are the chief hindrances to success in raising poultry. Most common health problems can be avoided through preventative management; nevertheless, sooner or later every flock experiences its share of problems. If someone is not prepared to deal with these problems, he or she should not get involved with poultry. As a poultry farmer, he or she must be ever vigilant in monitoring the condition of his or her flock.

- 7. Lighting:** Light is also a very important element for poultry farming. And poultry birds become very sensitive to light. Light helps the poultry birds to be productive, finding food and simulating them for reproduction. Besides light, the poultry birds also need dark period for keeping good health and producing melatonin hormone (which is very important for immune function). Almost all types of poultry birds require 8 hours of darkness period and 16 hours presence of light. Almost all poultry producer use only the natural light for lighting the poultry house.

Darkness is helpful for some fast growing broiler species, and helps them for reducing leg disorders and build their body frame. However, poultry chicks require 24 hours light daily after hatching for finding food and water pot. Some commercial broiler poultry producers use long lighting period to encourage the bird consume more food. This results into very fast growing of broilers. Broiler poultry birds do not eat food and drink water in the dark. If the poultry birds are kept in darkness for some moment, then they will be more active in the light than continuous lighting period (and they will eat more food). This is a good practice, and it keeps the poultry birds healthy. In addition to natural lighting, a farmer can use artificial light. In small scale poultry rearing, he or she can use 14 to 16 hours of lighting period for layer poultry (where artificial lighting is needed for 4 to 6 hours daily depending on the season).

Maintain the lighting period for layer poultry farming very carefully, otherwise they will lay eggs very soon or stop laying eggs. Use incandescent or fluorescent bulb for the purpose of artificial lighting. Fluorescent bulbs are very expensive than incandescent bulbs. But fluorescent bulbs are very energy efficient and long lasting. However, a farmer should use bulbs according to his or her choice and demand. In the case of incandescent bulbs, use a 60 watt bulb for each 200 square feet area, and use a wide reflector always to maximize the light. Clean the bulbs regularly. The farmer can use an automatic controller for maintaining a regular lighting period. Because if he or she forgets to switch on the light manually, then it can hamper the egg and meat production of his or her poultry birds.

Always use waterproof sockets inside the poultry housing system. Maintaining a lighting period inside the poultry house in the morning is very effective than lighting in the evening. Adjust the lighting period according to the weather conditions and season. Where there is no electricity or load shedding is very high, use batteries, lanterns or solar panels for lighting the poultry house.



**8. Litter:** For successful poultry farming and getting desired production, litter management is very important. Usually the litter is used for covering the floor of the poultry housing system which may be made of concrete, wooden or earthen. Litter absorbs the moisture and dilutes the manure. It also works as the bed for the poultry birds. Rice hulls and soft wood shavings are the common materials used by the farmers around the world. Besides this, they can use some other materials for litter making purpose such as recycled newspaper, sand, dried wood fiber, chopped pine straw, peanut hulls etc. Small-scale poultry farmer also use some other materials such as hay and straw as poultry litter.

Whatever the farmer uses, he or she should always try to use those materials which are healthy for poultry and compost well. A good litter contains about 20% to 30% moisture and a depth of about 2 to 4 inches. Ventilate the house very well, and it will help to remove moisture from the litter. High moisture in litter is very harmful for poultry health. Wet litter causes some problems like sores, and blisters on poultry birds and produce ammonia gas which hampers the respiratory system of poultry. Use aluminum sulfate or hydrated lime to reduce ammonia gas from the litter. A farmer can use the litter again and again after drying the materials properly. But he or she should not use the used litter if any disease has been detected in the poultry farm.

After selling the poultry, remove the used litter from poultry house by machine or hand. This litter can be used as good manure in the agricultural land for crop cultivation. In some areas poultry manure and litter is very valuable and an extra source of earning cash. Dry poultry manure contains 3.84% nitrogen, 2.01% phosphorus and 1.42% potassium. In a word, poultry manure is very suitable for making soil fertile and it can be used in organic farming system.

## **Poultry Species and Breeds for Farming**

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All species of poultry are used by rural smallholders throughout the world. The most important species in the tropics are: chickens, guinea fowl, ducks, pigeons, turkeys and geese.

### **Chickens**

Chickens originated in Southeast Asia and were introduced to the rest of the world by sailors and traders. Nowadays, indigenous village chickens are the result of centuries of cross-breeding with exotic breeds and random breeding within the flock. As a result, it is not possible to standardize the characteristics and productive performance of indigenous chickens.

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